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ABSTRACT

After receiving training in searching INSPEC or ERIC on DIALOG using either the SciMate menu or native commands, 40 doctoral students performed free searches on research topics of their choice. In comparison with 20 control subjects (doctoral students for whom a free search was performed by a skilled librarian), the experimental subjects were equally satisfied with their retrievals, which were smaller but higher in relevance than those produced by the intermediaries, and were more likely to follow up the search by consultation of the references listed. Subjects instructed to use native commands committed fewer errors during training, required less training time, and interacted more with the databases than subjects trained on the SciMate menu. An examination of differences by sex revealed that women indicated that they would actually consult a higher proportion of the references listed than men, and that women tended to assign a higher monetary value to their searches than men. It is concluded that end-users can learn to do their own literature searches effectively, with or without a menu interface. Results are discussed in terms of cognitive and motivational determinants, statistical evidence is displayed in 40 tables, and references are provided. Study questionnaires, quizzes, and end-user searching workbooks are appended. (KM)

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DIRECT ACCESS TO BIBLIOGRAPHIC DATABASES BY END-USERS: MENU FACILITATION VERSUS NATIVE COMMAND LANGUAGE

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ABSTRACT

We trained 40 doctoral students to search Inspec or Eric on Dialog using either the Scimate Menu or native commands. Each subject then performed a free search on his chosen research topic. In comparison with 20 control subjects (doctoral students for whom a free search was performed by a skilled librarian) the experimental subjects were no less satisfied with their retrievals, which were smaller but higher in relevance than the retrievals produced by the intermediaries. Subjects instructed to use native commands committed fewer errors during training, required less training time, and interacted more with the databases than subjects trained on the SciMate Menu. Women indicated that they would actually consult a higher proportion of the references listed than men; women also tended to assign a higher monetary value to their searches then men. Results are discussed in terms of cognitive and motivational determinants. The study is encouraging for advocates of end-user searching.

DIRECT ACCESS TO BIBLIOGRAPHIC DATABASES BY END USERS: MENU FACILITATION VERSUS NATIVE COMMAND LANGUAGE

There is an increasing perception among information professionals that direct end-user access to online bibliographic databases is both desirable and inevitable and that librarians have a responsibility to ease the transition from mediated searching (Meadow, 1979; Fenichel, 1979; Caruso, 1981). In contrast, some information professionals continue to question whether end-users would produce searches of the quality and cost effectiveness expected of a skilled intermediary. While the literature describing various programs to provide access to end-users has proliferated in the past few years (e.g., Fenichel, 1979; ACRL/BIS, 1986; Des Chene, 1985; Lyon, 1984; Kehoe, 1985), much of the more rigorous research has been done in the context of evaluating public access to online catalogs (Hildreth, 1982) or in studies that employ experimental systems not widely available outside the information science research community (e.g., Meadow, Hewett and Aversa, 1982a, 1982b; Marcus and Reintjes, 1981a, 1981b;).

We present here an experimental study of end-user searching using publicly available bibliographic databases and using techniques and systems that are also publicly available. We compare two approaches to introducing end-users to searching Dialog: instruction in the native Dialog command language and instruction in the use of the SciMate menu interface. Results are reported in terms of quality of retrieval and in terms of effectiveness of the two approaches in meeting a set of specific learning objectives. Comparisons between the two approaches with respect to quality of retrieval are augmented by comparisons with retrievals by a skilled search intermediary.

SciMate is but one of several commercially available personal computer software packages intended to facilitate end-user searching (Garfield, 1983; Kehoe, 1985; Hawkins and Levy, 1985). It presents a menu of choices for the user, which presumably relieves him from learning a burdensome set of commands. Users have the option, though, of by-passing the menu in favor of the native command mode. Common lore has it that the menu mode will be easier to learn and remember, although the command mode will provide greater flexibility and afford more complete use of the power of the native system. Given these considerations, one might predict that novice searchers would be more successful under the menu mode than under the native command mode. Expert searchers might be either more or less successful than either of the end-user groups, depending on whether subject expertise or system expertise prevails in determining search quality.

We do not intend this study as a test of SciMate, but rather as an investigation about the utility of menu systems compared to command systems, and as a comparison of end-users with search intermediaries. The most general conclusions about menus versus

command languages, or end-users versus intermediaries, will depend on the eventual weight of evidence from a variety of studies.

METHODS

>Design.

The experimental design is depicted below:

TREATMENT

DATABASE	Native Dialog	SciMate Menu	Mediated Controls
Inspec	10 subjects	10 subjects	10 subjects
ERIC	10 subjects	10 subjects	10 subjects

Inspec subjects were doctoral students recruited from the School of Engineering at Stanford University. Eric subjects were doctoral students recruited from the School of Education at Stanford. Within database groups, subjects were randomly assigned to one of three treatments: Native Dialog, SciMate Menu, and Mediated Controls. All subjects answered a preliminary questionnaire that assessed their experience with computers and libraries, as well as age group, gender, and research interests.

>Treatments.

1. Native Dialog. Each of 20 subjects spent two two-hour sessions logged onto Inspec or Eric via the SciMate front end, in Command Mode. Sessions were separated by 1-3 days. An IBM PC-XT with a 10 MB hard disk and a 1200-baud modem was used as the terminal. In this group, SciMate functioned only as a device for automatic logon and downloading of results. The sessions were guided by a self-paced written tutorial which presented online exercises for the subject to complete. A quiz at the end of each session tested mastery of the learning objectives addressed in that session. Over the two sessions the following learning objectives were addressed:

LO1: knows mechanics of terminal operation using the PC and the SciMate front end; includes logon and logoff, connecting to a database, and correction of input errors.

LO2: knows basics of search preparation; includes formulation of search facets and use of Boolean operators (OR, AND, NOT).

LO3: knows basic system commands; includes EXPLAIN, SELECT STEPS, TYPE, DISPLAY SETS, EXPAND, PAGE.

LO4: knows how to use selected special features; includes proximity operator, truncation.

LO5: knows basics of subject searching; included Basic Index,/DE,/ID,/TI,/AB.

LO6: knows basics of non-subject searching, including AU=, CS=, TC=; includes use of EXPAND command.

LO7: knows basics of modifying search results online; includes narrowing and broadening retrievals.

LO8: knows individual database characteristics; includes use of Dialog "Blue Sheets" for identifying the structure of a record in a given database and for identifying the subject coverage of a given database.

In a third two-hour session, each subject performed a free search on the research topic of his doctoral dissertation. Preceding the search, a retention quiz was taken, consisting of a selection of the same questions that had been asked on the first two quizzes. Following the search, subjects answered a questionnaire that measured their assessments of the results of the retrievals. The following variables were measured on the questionnaire:

- User satisfaction
- Retrieval size
- Relevance (precision)
- Percentage of the retrieval that the subject actually intended to use
- Perceived dollar value of the search
- Comparison of actual retrieval size with expected retrieval size
- Expected future frequency of database searching as an end-user

2. SciMate Menu. Subjects assigned to this group were treated exactly as the Native Dialog group, except that: (a) the Menu mode of the SciMate front end was used instead of the Command mode; and (b) the questions on the three quizzes were modified to reflect differences between the two modes. The same learning objectives were addressed in the tutorial and tested on the quizzes.

3. Mediated Controls. Subjects assigned to this group completed the preliminary questionnaire but received no instruction in searching. Instead, a skilled librarian performed a search for them on their dissertation topics using the SciMate Command Mode. Subjects completed the same final questionnaire on the results of the retrievals as did the two end-user groups.

Treatments are summarized as follows:

Native Dialog	SciMate Menu	Mediated Controls
- Preliminary questionnaire	Preliminary questionnaire	Preliminary questionnaire
- First 2-hour terminal session using Command Mode of SciMate front end	First 2-hour terminal session using Menu Mode of SciMate front end	
- Second 2-hour terminal session using Command Mode	Second 2-hour terminal session using Menu Mode	
- Subject performs a search on his research topic using Command Mode	Subject performs a search on his research topic using Menu Mode	Librarian performs a search on subject's research topic using Command Mode.
-- Subject completes final questionnaire	Subject completes final questionnaire	Subject completes final questionnaire

RESULTS

The two end-user groups retrieved fewer references than did the Mediated Controls, but judged their retrievals as having higher relevance. The Native Dialog group required less time than the SciMate Menu group to complete the tutorials, and tended to make fewer errors on all three quizzes. Subjects in the Native Dialog group interacted more frequently with the database as evidenced by their greater use of the TYPE command. There were some suggestive differences in gender and experience in using computers that may merit further investigation.

>User Satisfaction Variables.

- General Satisfaction. All groups reported approximately the same level of General Satisfaction with their final retrievals. General Satisfaction was based on response to the question:

"In comparison with your expectations, to what extent did the results satisfy the information need with which you came? (check one)

Exceeded my expectations (4) _____
Met my expectations (3) _____

Somewhat disappointed me (2) _____
Disappointed me very much (1) _____ "

As shown in Table 1, all groups responded at approximately the "3" level ("Met my expectations").

- Retrieval Size. As shown in Table 1, the end-user groups retrieved fewer references than the Mediated Controls ($p < .05$, $F = 3.725$). This finding was mostly due to differences between the Command group and the Control group ($t = -3.01$, $p < .005$; see Table 4A).

This is not surprising in view of the emphasis given in training librarians on the importance of comprehensive searches. The outcome could have resulted from the professional searchers' greater expertise in searching; alternatively, it could have resulted from an imperfectly precise understanding of the requestors' search questions.

- Relevance. Relevance was based on response to the question:

> "Of the references printed out how many appear to be relevant to your search? (=relevant - satisfies your stated information needs - more than of just general interest to your studies)".

As shown in Table 1, Relevance was judged by the end-user groups as being in the neighborhood of 70%, as compared to approximately 50% for the Mediated Controls. This difference is statistically significant ($p < .001$, $F=8.534$).

- References Actually Used. End-users stated that they would actually use a higher percentage of the references printed out than did Mediated Controls ($p < .01$, $F = 4.991$). This finding is based on responses to the question:

> "How many references from your printout do you intend to follow up by locating the full article?"

- Value. Inspec subjects in all treatment groups assigned a higher monetary value to their free searches ($p < .01$, $F = 1.236$) than did Eric subjects. This result could reflect the actual higher cost of an Inspec search, although such an interpretation presumes that the subjects have had sufficient experience to have realistic cost expectations. It might also reflect a higher satisfaction with the retrieval, although that interpretation is not confirmed by the other User Satisfaction variables. Perhaps the most straightforward explanation is that engineering graduate students receive higher stipends, or have greater access to grant money to pay for searches, than do education graduate students. These data are based on the following question:

> "This was a free search. If it were not free what is the maximum you would be willing to pay?

1. Less than $15
2. $15 - $30
3. $31 - $45
4. $46 - $70
5. More than $70"

A result of 2.00 in Table 1, for example, indicates a willingness to pay as much as $15 - $30.

- Expected Retrieval. While there may have been a slight tendency for the Mediated Controls to state that retrievals were larger than expected, this result was not statistically significant. The data are based on the question:

" How many relevant references did you get printed out in comparison to what you expected? (Check one)

1. Fewer than expected? _____
2. About the same as expected? _____
3. More than expected? _____"

A result of 2.00 in Table 1 would indicate a retrieval size about the same as expected.

- Expected Frequency of Use. Inspec subjects in all treatments indicated a greater likelihood of using Dialog in the future ($p < .05$, $F = 4.876$), as evidenced by their responses to the question:

"Do you plan to get a DIALOG account? Yes _____
(0) NO _____

If yes, how often do you expect to use your account?

(1) Less than once a month _____
(2) 1-2 times a month _____
(3) 3-4 times a month _____
(4) More than 4 times a month _____"

A value of 0.20 in Table 4, for example, would indicate that many subjects did not plan to get an account, while a value of 1.10 would indicate that the average subject expected to get an account and use it somewhat less often than once a month. The greater willingness of the Inspec subjects to get their own accounts might suggest that engineering students are more comfortable with computerized methods, or that they have a greater ability to pay for the access. Since other measures of satisfaction do not indicate that the Inspec subjects are happier than the Eric subjects with their results, we are skeptical about an interpretation in terms of User Satisfaction.

> Learning Variables.

- Tutorial Time. All the end-user subjects were allowed two two-

hour sessions (240 minutes) on the tutorial. Table 2 shows how much average time each group actually required. The Inspec Native Dialog (Command) group required a significantly shorter time than the Inspec Menu group ($p < .001$, $F = 28.068$). We decided to forego a statistical comparison between Inspec and Eric groups because we were not confident that the Eric tutorial was rigorously comparable to the Inspec tutorial (fortunately this did not significantly affect the outcome of the User Satisfaction results, however).

We would have been surprised had the Menu subjects not required the greater tutorial time, since the exercises required navigating through the time-consumming maze of choices typical of menu systems.

- Total Test Errors. While there was a tendency for the Inspec Command group to make fewer errors than the Inspec Menu group on the first two quizzes, this difference was not statistically significant (Tables 2 and 5). However, the Inspec Command group did make significantly fewer errors than the Inspec Menu group on questions that measured mastery of Learning Objective 3 ("knows basic system commands"). A possible interpretation would be that Menu subjects set themselves in a passive learning mode conditioned by dependence on the system prompts, and that this passivity interfered with active learning of the basic commands. It would be interesting to investigate whether passive learning under a menu transfers to acquisition of the more active command mode, as is sometimes assumed by the designers of public access catalog interfaces (Arret, 1985; Hildreth, 1982).

- Retention Test Errors. As with the first two quizzes, the Inspec Native Command group tended to make fewer errors than the Inspec Menu group, although the difference was not statistically significant. We had wondered whether the passive learning we presumed for the Menu group might result in faultier retention than the Native Dialog group, but the data do not support that hypothesis.

> Measures of Interactiveness.

As shown in Table 3, the Command groups interacted more frequently with the database than did the Menu groups, as is evidenced by their more frequent use of the Type command ($p < .005$, $F(2)=10.625$). This was especially evident in the use of Format 6, which lists titles only and functions mostly as an indication of retrieval relevance without displaying specific information about individual references ($p < .001$, $F=22.307$).

>Sex Differences

Effects of gender are shown in Tables 7-17. Significant effects of sex were found on the following variables:

- References Actually Used
- Value
- Tutorial Time
- Tutorial Errors

- References Actually Used. For all three treatment groups females indicated that they would actually use a greater percentage of their retrievals than males (Table 10). This difference was statistically significant ($p < .005$, $F=8.623$). Females also showed a tendency to return higher relevance judgements than males in all three groups (Table 9), although the difference was not statistically significant. Whether this sex difference was due to superior search results for the women subjects cannot be readily determined, but the fact that it was found in Mediated Controls as well as the end-user groups argues against this interpretation.

- Value. As shown in Table 11, women tended to assign a higher monetary value to their searches than men ($p < .04$, $F=4.465$).

- Tutorial Time. As shown in Table 14, women in the Native Dialog Command group required less tutorial time than women in the Scimate Menu group, and likewise for men ($p < .05$, $F=1.547$). Eric subjects of either sex required less time than Inspec subjects ($p < .005$, $F=8.928$).

- Tutorial Errors. As shown in Table 15, women made more errors on the tutorial quizzes than men ($p < .05$, $F= 6.725$), especially in the Native Dialog Command group ($p < .05$, $F= 2.506$).

>Age Differences. We did not find age differences to affect any of the variables we measured.

>Effects of Computer Sophistication. Self assessed computer sophistication did not affect any of the variables we measured, except for Expected Frequency of Use ($p < .05$, $F=3.204$)--and that relationship was not a simple or direct one, as shown in Table 33 and summarized below:

Level of Sophistication	Expected Freq of Use
1. Novice	0.50 (N=6)
2. Below Average	0.45 (N=11)
3. Average	0.45 (N=20)
4. Above Average	0.53 (N=19)
5. Expert	4.00 (N=1)

Table 40 shows that there are some correlations between computer experience and User Satisfaction. Because of the shotgun approach, however, these results can only be regarded as suggestive.

DISCUSSION

This study shows that end-users can learn to do their own literature searches effectively, with or without a menu interface. Our most clearcut and interesting findings were the differences between the end-user groups and the Mediated Controls with respect to user satisfaction variables. Regardless of which of the two training methods were used, end-users were just as satisfied with their retrievals as the Mediated Controls were with the retrievals of trained librarians. Moreover, the end-users' retrievals were smaller, more precise and more likely to be followed up by consultation of the references listed.

We found no evidence that searching was easier to learn under the menu version of SciMate than under the native command method. The menu subjects required longer to get through the tutorials than the native command subjects; moreover, the menu subjects made at least as many errors - perhaps even more - than the native command subjects. The native command subjects were more prone to interact with Dialog than the menu subjects, and showed greater mastery of the basic commands. While these differences did not result in clear cut differences in the quality of retrievals in our study, it would be interesting to investigate whether, with more prolonged searching experience, the greater interactiveness and the better mastery of commands would eventually result in better retrievals for end-users who learn the native Dialog commands. On the other hand, had training been even less extensive than the four-hour regimen of the present experiment, the menu subjects might well have done better than the command subjects - the present experiment does not explore the effects of different degrees of training exposure.

In fairness to menu systems, we emphasize that our study does not imply that menus are inherently more expensive to use than native command modes. Although our menu subjects spent more time doing the online exercises in the tutorials, most pc-based menu software systems nowadays permit the end-user to set up a search offline before logging onto the host mainframe. It would be interesting to compare costs of using menus versus command modes in studies more explicitly designed for that purpose.

What are the causes of the greater precision of end-users' retrievals, and the greater willingness of end-users to follow up by actually consulting the references? Are they cognitive or motivational? For example, a cognitive explanation might be sought in the presumed superiority of the end-user over the librarian with respect to the specific jargon of his or her research topics. Such an explanation would be consistent with the librarian's presumed tendency to

rely more heavily on such bibliographic apparatus as controlled thesauri, which might be expected to produce larger but less precise retrievals. Motivational causes might be sought, for example, in the theory of cognitive dissonance (Festinger, 1957). In terms of dissonance theory, an end-user who has labored to learn searching skills will be motivated to reduce the dissonance between his recognition of effort invested and any perceived dissatisfaction with the fruits of his efforts. One way of reducing the dissonance would be to exaggerate his perception of satisfaction by claiming a high degree of relevance for his retrieval and by actually consulting the references. The Mediated Controls, having invested less effort, would be less motivated to reduce dissonance.

Some of the tentative sex differences we found do suggest support for a dissonance reduction explanation. For example, might the greater number of errors made by women than men on the tutorials suggest that the women in our study, for whatever reasons, found the tutorials more difficult than men? If so, then dissonance reduction might partly explain the greater tendency of women to actually consult their references, and the higher monetary values they placed on their retrievals. Our study was not explicitly designed to test for sex differences, and we are skeptical of the generality of the sex differences we found. Further investigation may well be merited in this area, however.

In general, we suggest that investigations of the cognitive and motivational components of end-user searching would be a rich vein of research to mine. Such studies might eventually guide information professionals in devising effective training methods geared to the individual cognitive and motivational characteristics of diverse end-user populations. Whether training methods employ menus, commands, expert systems, or even approaches not yet conceived, the cognitive and motivational characteristics of end-users will be relevant and interesting.

On the more practical side, the present study is encouraging to librarians who wish to ease the transition to end-user based searching. In our study training on either a menu system or a native command system produced excellent results. In principle we would expect much the same results from CD/ROM based stand-alone databases with Boolean search capabilities as we found with mainframe-based systems. There is little reason not to go ahead.

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TABLE 1:
MEASURES OF USER SATISFACTION

	---COMMAND---		-----MENU-----		---MEDIATED---- ---CONTROLS----	
	INSPEC	ERIC	INSPEC	ERIC	INSPEC	ERIC
GENERAL SATISFACTION	3.00	3.50	3.10	3.40	3.10	3.10
RETRIEVAL SIZE (1)	74.00	85.00	102.00	94.00	110.00	118.00
RELEVANCE % (2)	67.90	84.80	73.00	65.70	53.20	43.50
REFS ACTUALLY USED (%)(3)	46.40	65.60	54.00	48.90	32.50	34.40
VALUE (4)	2.67	2.00	3.20	1.70	2.10	1.90
EXPECTED RETRIEVAL	1.90	2.40	2.10	1.90	2.30	2.30
EXPECTED FREQ OF USE (5)	1.10	0.20	0.90	0.33	0.40	0.20

Notes: Statistically significant main effect of:

1. Treatment ($F(2)=3.725$, $p<.05$.) See Table 4.
2. Treatment ($F(2)=8.534$, $p<.001$). See Table 4.
3. Treatment ($F(2)=4.991$, $p<.01$). See Table 4.
4. Database ($F(2)=1.236$, $p<.01$). See Table 4.
5. Database ($F(1)=4.876$, $p<.05$). See Table 4.

TABLE 2:
MEASURES OF LEARNING

		---COMMAND---		-----MENU-----		
		INSPEC	ERIC	INSPEC	ERIC	
TUTORIAL TIME (MINUTES) (1)		164.0	154.7	224.3	182.1	
TOTAL TEST ERRORS		7.9	13.5	10.5	11.1	
ERRORS ON LEARNING OBJECTIVES						
	L01	0.1	0.2	0.0	0.9	"Knows mechanics of terminal & system"
	L02	1.6	1.8	2.1	1.3	"Knows basics of search preparation"
	L03(2)	1.4	1.7	2.4	2.4	"Knows basic system commands"
	L04	0.4	1.6	1.0	1.4	"Special features: proximity, truncation"
	L05	1.6	2.4	1.5	1.9	"Knows basics of subject searching"
	L06	1.0	1.1	2.3	1.8	"Knows basics of non-subject searching: author, reprint, address, EXPAND, prefix codes"
	L07	1.0	2.7	1.2	0.7	"Knows basics of modifying search results online"
	L08	0.0	2.0	0.0	0.7	"Individual database characteristics"
ERRORS ON RETENTION TEST		8.3	3.0	11.2	2.1	

Notes: Statistically significant main effect of:

1. Treatment ($F(1) = 28.068$, $p<.001$). See Table 5.

2. Treatment ($F(1) = 4.787$, $p<.05$). See Table 5.

TABLE 3:
MEASURES OF INTERACTIVENESS

	---COMMAND---		----MENU-----	
	INSPEC	ERIC	INSPEC	ERIC
TOTAL # OF 'TYPE' COMMANDS ISSUED DURING FINAL SEARCH (1)	22.7	17.1	14.7	13.5
USE OF SPECIFIC FORMATS DURING FINAL SEARCH:				
FORMAT 2	3.0	1.9	1.6	2.0
FORMAT 3	3.2	3.1	2.1	3.3
FORMAT 5	9.1	5.3	5.6	4.7
FORMAT 6 (2)	5.6	7.5	2.8	1.2
FORMAT 7	0.0	0.0	0.5	0.0
FORMAT 8	1.8	1.0	2.1	2.3

Notes: Statistically significant main effect of:

1. Treatment ($F(2) = 10.625$, $p<.005$). See Table 6.

2. Treatment ($F(2) = 22.307$, $p<.001$). See Table 6.

TABLE 4: 2-WAY ANALYSIS OF VARIANCE FOR USER SATISFACTION VARIABLES
(BY TREATMENT, DATABASE)

	MAIN EFFECTS: TREATMENT F(df)	TREATMENT signif.	MAIN EFFECTS: DATABASE F(df)	DATABASE signif	2-WAY INTERACTION F(df)	2-WAY INTERACTION signif
GENERAL SAT	6.375(2)	0.689	2.667(1)	0.108	0.792(2)	0.458
RETRIEVAL SIZE	3.725(2)	0.031	0.113(1)	0.738	0.311(2)	0.734
RELEVANCE (%)	8.534(2)	0.001	0.009(1)	0.927	2.120(2)	0.130
REFS ACTLY USD(%)	4.991(2)	0.010	0.373(1)	0.544	1.802(2)	0.175
VALUE	1.331(2)	0.273	1.236(1)	0.010	2.640(2)	0.081
EXPE RETRIEVAL	0.776(2)	0.465	0.259(1)	0.613	1.121(2)	0.333
EXPE FREQ OF USE	0.796(2)	0.456	4.876(1)	0.032	0.658(2)	0.522

TABLE 4A: TWO-TAILED T-TEST FOR SELECTED USER SATISFACTION VARIABLES

	COMMAND VS CONTROLS t	COMMAND VS CONTROLS signif	MENU VS CONTROLS t	MENU VS CONTROLS signif	ALL END-USERS VS CONTROLS t	ALL END-USERS VS CONTROLS signif	COMMAND VS MENU t	COMMAND VS MENU signif
RETRIEVAL SIZE	-3.010	0.005	-1.290	0.206	-2.330	0.023	-1.430	0.161
RELEVANCE (%)	3.970	0.000	3.090	0.004	4.100	0.000	1.020	0.313
REFS ACTLLY USD(%)	3.300	0.002	2.660	0.011	3.310	0.002	0.640	0.524
VALUE	1.220	0.230	1.370	0.178	1.400	0.168	-0.360	0.718

TABLE 5: ANALYSIS OF VARIANCE FOR LEARNING VARIABLES BY TREATMENT
(FOR INSPEC GROUPS ONLY, EXCLUDING MEDIATED CONTROLS)

	-MAIN EFFECTS-- -OF TREATMENT-- F(df)	signif
TUTORIAL TIME	28.068(1)	0.000
RETENTION ERRORS	2.081(1)	0.166
TOTAL ERRORS	2.42(1)	0.137
ERRORS ON LEARNING OBJECTIVES:		
LO1	1.000(1)	.330
LO2	0.996(1)	.339
LO3	4.787(1)	.042
LO4	3.115(1)	.095
LO5	0.101(1)	.754
LO6	0.540(1)	.472
LO7	0.231(1)	.637

TABLE 5A: T-TESTS FOR DIFFERENCES ON LEARNING VARIABLES

	INSPEC VS ERIC		COMMAND VS MENU	
	t	signif	t	signif
TUTORIAL TIME	2.380	0.023	-4.780	0.000
RETENTION ERRORS	******	******	-0.630	0.529
TOTAL ERRORS	******	******	-0.070	0.947

****** omitted due to lack of comparability between tests

TABLE 6: ANALYSIS OF VARIANCE FOR END-USER INTERACTIVENESS BY TREATMENT AND DATABASE (EXCLUDES MEDIATED CONTROLS)

	MAIN EFFECTS: TREATMENT F(df)	MAIN EFFECTS: TREATMENT signif	MAIN EFFECTS: DATABASE F(df)	MAIN EFFECTS: DATABASE signif	2 WAY INTERACTION F(df)	2 WAY INTERACTION signif
TOTAL TYPE COMMANDS	10.625(2)	0.002	1.562(1)	0.219	0.438	0.512(2)
USE OF FORMATS:						
FORMAT 2	0.470(2)	0.497	0.136(1)	0.714	0.626	0.434(2)
FORMAT 3	0.182(2)	0.672	0.273(1)	0.605	0.381	0.541(2)
FORMAT 5	2.188(2)	0.148	2.875(1)	0.099	1.095	0.302(2)
FORMAT 6	22.307(2)	0.000	0.024(1)	0.877	3.300	0.078(2)
FORMAT 7	1.000(2)	0.324	1.000(1)	0.324	1.000	0.324(2)
FORMAT 8	0.684(2)	0.413	0.096(1)	0.758	0.267	0.608(2)

TABLE 6A: TWO-TAILED T-TESTS FOR DIFFERENCES ON INTERACTIVENESS

	COMMAND VS MENU t	COMMAND VS MENU signif	INSPEC VS ERIC t	INSPEC VS ERIC signif
TOTAL TYPE COMMANDS	3.260	0.002	1.120	0.268
USE OF FORMAT 6	4.640	0.000	-0.120	0.903

TABLE 7: SEX DIFFERENCES IN GENERAL SATISFACTION

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	3.63 (N=8)	3.33 (N=6)	3.00 (N=5)
MALE	3.00 (N=12)	3.21 (N=14)	3.13 (N=15)

	INSPEC	ERIC
FEMALE	4.00 (N=1)	3.33 (N=18)
MALE	3.03 (N=29)	3.33 (N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	4.00 (N=1)	____ (N=0)
MALE	3.00 (N=10)	3.00 (N=9)	3.10 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	3.63 (N=8)	3.20 (N=5)	3.00 (N=5)
MALE	3.00 (N=2)	3.60 (N=5)	3.20 (N=5)

TABLE 8: SEX DIFFERENCES IN RETRIEVAL SIZE

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	95.86(N=7)	91.00(N=6)	109.80(N=5)
MALE	69.25(N=12)	100.86(N=14)	115.53(N=15)

	INSPEC	ERIC
FEMALE	155.00 (N=1)	94.76 (N=17)
MALE	93.24 (N=29)	106.00(N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	155.00 (N=1)	____ (N=0)
MALE	73.00 (N=10)	95.89 (N=9)	110.30(N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	95.86 (N=7)	78.20 (N=5)	109.80 (N=5)
MALE	46.50 (N=2)	109.80 (N=5)	126.00 (N=5)

TABLE 9: SEX DIFFERENCES IN RELEVANCE

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	82.75 (N=8)	78.00(N=6)	44.80(N=5)
MALE	72.08 (N=12)	65.64 (N=14)	49.53 (N=15)

	INSPEC	ERIC
FEMALE	95.00 (N=1)	69.94 (N=18)
MALE	63.66 (N=29)	56.75 (N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	95.00 (N=1)	____ (N=0)
MALE	67.90 (N=10)	70.56 (N=9)	53.20 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	82.75 (N=8)	74.60 (N=5)	44.80 (N=5)
MALE	93.00 (N=2)	56.80 (N=5)	42.20 (N=3)

TABLE 10: SEX DIFFERENCES IN REFERENCES ACTUALLY USED
(Statistically significant main effect of sex, $F(1)=8.628$, $p<.005$, see Table 17)

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	73.63 (N=8)	53.00 (N=6)	47.80 (N=5)
MALE	44.09 (N=11)	50.79 (N=14)	28.67 (N=67)

	INSPEC	ERIC
FEMALE	50.00 (N=1)	60.89 (N=18)
MALE	44.04 (N=28)	32.75 (N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	50.00 (N=1)	____ (N=0)
MALE	46.44 (N=9)	54.44 (N=9)	32.50 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	73.63 (N=8)	53.60 (N=5)	47.80 (N=5)
MALE	33.50 (N=2)	44.20 (N=5)	21.00 (N=5)

TABLE 11: SEX DIFFERENCES IN VALUE
(Statistically significant main effect of sex, $F(1)=4.465$, $p<.040$, see Table 17)

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	2.00 (N=8)	2.50 (N=6)	2.20 (N=5)
MALE	2.55 (N=11)	2.43 (N=14)	1.93 (N=15)

	INSPEC	ERIC
FEMALE	4.00 (N=1)	2.11 (N=18)
MALE	2.61 (N=28)	1.50 (N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	4.00 (N=1)	____ (N=0)
MALE	2.67 (N=9)	3.11 (N=9)	2.10 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	2.00 (N=8)	2.20 (N=5)	2.20 (N=5)
MALE	2.00 (N=2)	1.20 (N=5)	1.60 (N=5)

TABLE 12: SEX DIFFERENCES IN EXPECTED FREQUENCY OF USE

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	0.25 (N=8)	0.33 (N=6)	0.40 (N=5)
MALE	0.92 (N=12)	0.77 (N=13)	0.27 (N=15)

	INSPEC	ERIC
FEMALE	0.0 (N=1)	0.33 (N=18)
MALE	0.83 (N=29)	0.09 (N=11)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	0.00 (N=1)	____ (N=0)
MALE	1.10 (N=10)	1.00 (N=9)	0.40 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	0.25 (N=8)	0.40 (N=5)	0.40 (N=5)
MALE	0.0 (N=2)	0.25 (N=4)	0.0 (N=5)

TABLE 13: SEX DIFFERENCES IN EXPECTED RETRIEVAL

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	2.75 (N=8)	2.00 (N=6)	2.00 (N=5)
MALE	1.75 (N=12)	2.00 (N=14)	2.40 (N=15)

	INSPEC	ERIC
FEMALE	2.00 (N=1)	2.33 (N=18)
MALE	2.10 (N=29)	2.00 (N=12)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	____(N=0)	2.00 (N=1)	____ (N=0)
MALE	1.90 (N=10)	2.11 (N=9)	2.30 (N=10)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
FEMALE	2.75 (N=8)	2.00 (N=5)	2.00 (N=5)
MALE	1.00 (N=2)	1.80 (N=5)	2.60 (N=5)

TABLE 14: SEX DIFFERENCES IN TUTORIAL TIME

	COMMAND	MENU
FEMALE	152.25 (N=8)	197.83 (N=6)
MALE	164.08(N=12)	205.46(N=14)

(Statistically significant effect of treatment F(1)=1.547, p<.05, see Table 17)

	INSPEC	ERIC
FEMALE	183.00 (N=1)	170.92(N=13)
MALE	194.71(N=19)	163.71(N=7)

(Statistically significant effect of database F(1)=8.928, p<.005, see Table 17)

INSPEC ONLY

	COMMAND	MENU
FEMALE	____(N=0)	183.00 (N=1)
MALE	164.00(N=10)	228.83(N=9)

ERIC ONLY

	COMMAND	MENU
FEMALE	152.25(N=8)	200.80 (N=5)
MALE	164.50 (N=2)	163.40 (N=5)

TABLE 15: SEX DIFFERENCES IN TUTORIAL ERRORS
(Statistically significant main effect of sex, $F(1)=6.725$, $p < .05$, see Table 17)

	COMMAND	MENU
FEMALE	15.5 (N=8)	11.5 (N=6)
MALE	7.5 (N=12)	10.5 (N=14)

(Statistically significant effect of Treatment, $F(1)=5.435$, $p<2.506$, see Table 17)

	INSPEC	ERIC
FEMALE	12.00 (N=1)	13.92 (N=13)
MALE	9.05 (N=19)	9.29 (N=7)

INSPEC ONLY

	COMMAND	MENU
FEMALE	____(N=0)	12.00 (N=1)
MALE	7.90 (N=10)	10.33 (N=9)

ERIC ONLY

	COMMAND	MENU
FEMALE	15.50 (N=8)	11.40 (N=5)
MALE	5.50 (N=2)	10.80 (N=5)

TABLE 16: SEX DIFFERENCES IN RETENTION ERRORS

	COMMAND	MENU
FEMALE	3.38 (N=8)	3.50 (N=6)
MALE	7.17 (N=12)	8.00 (N=14)

	INSPEC	ERIC
FEMALE	13.00 (N=1)	2.69 (N=13)
MALE	9.58 (N=19)	2.29 (N=7)

INSPEC ONLY

	COMMAND	MENU
FEMALE	____(N=0)	13.00 (N=1)
MALE	8.30 (N=10)	11.00 (N=9)

ERIC ONLY

	COMMAND	MENU
FEMALE	3.38 (N=8)	1.60 (N=5)
MALE	1.50 (N=5)	2.60 (N=5)

TABLE 17: AGE DIFFERENCES ON GENERAL SATISFACTION

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	3.27 (N=11)	3.30 (N=10)	3.08 (N=13)
30-39 YEARS OLD	3.00 (N=5)	3.20 (N=10)	3.00 (N=5)
40-49 YEARS OLD	3.00 (N=2)	------ (N=0)	3.50 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	3.10 (N=21)	3.33 (N=13)
30-39 YEARS OLD	3.00 (N=8)	3.17 (N=12)
40-49 YEARS OLD	3.00 (N=1)	3.33 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	3.13 (N=8)	3.00 (N=6)	3.14 (N=7)
30-39 YEARS OLD	2.00 (N=1)	3.25 (N=4)	3.00 (N=3)
40-49 YEARS OLD	3.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	3.67 (N=3)	3.75 (N=4)	3.00 (N=6)
30-39 YEARS OLD	3.25 (N=4)	3.17 (N=6)	3.00 (N=2)
40-49 YEARS OLD	3.00 (N=1)	------ (N=0)	3.50 (N=2)

TABLE 18: AGE DIFFERENCES ON RETRIEVAL SIZE

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	69.10 (N=10)	88.90 (N=10)	128.23 (N=13)
30-39 YEARS OLD	96.60 (N=5)	106.90 (N=10)	90.20 (N=5)
40-49 YEARS OLD	90.00 (N=2)	------ (N=0)	82.00 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	94.14 (N=21)	105.83 (N=12)
30-39 YEARS OLD	97.75 (N=8)	101.75 (N=12)
40-49 YEARS OLD	100.00 (N=1)	81.33 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	74.13 (N=8)	90.50 (N=6)	120.14 (N=7)
30-39 YEARS OLD	45.00 (N=1)	118.75 (N=4)	87.33 (N=3)
40-49 YEARS OLD	100.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	49.00 (N=2)	86.50 (N=4)	137.67 (N=6)
30-39 YEARS OLD	109.50 (N=4)	99.00 (N=6)	94.50 (N=2)
40-49 YEARS OLD	80.00 (N=1)	------ (N=0)	82.00 (N=2)

TABLE 19: AGE DIFFERENCES ON RELEVANCE

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	71.91 (N=11)	75.40 (N=10)	45.92 (N=13)
30-39 YEARS OLD	84.60 (N=5)	63.30 (N=10)	50.60 (N=5)
40-49 YEARS OLD	75.00 (N=2)	------ (N=0)	58.50 (N=2)

	INSFEC	ERIC
20-29 YEARS OLD	63.48 (N=21)	62.23 (N=13)
30-39 YEARS OLD	66.63 (N=8)	64.67 (N=12)
40-49 YEARS OLD	75.00 (N=1)	64.00 (N=3)

INSFEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	64.38 (N=8)	79.00 (N=6)	49.14 (N=7)
30-39 YEARS OLD	89.00 (N=1)	64.00 (N=4)	62.67 (N=3)
40-49 YEARS OLD	75.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	92.00 (N=3)	70.00 (N=4)	42.17 (N=6)
30-39 YEARS OLD	83.50 (N=4)	62.83 (N=6)	32.50 (N=2)
40-49 YEARS OLD	75.00 (N=1)	------ (N=0)	58.50 (N=2)

TABLE 20: AGE DIFFERENCES ON REFERENCES ACTALLY USED

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	49.00 (N=10)	59.50 (N=10)	32.69 (N=13)
30-39 YEARS OLD	65.20 (N=5)	43.40 (N=10)	25.40 (N=5)
40-49 YEARS OLD	62.50 (N=2)	------ (N=0)	58.50 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	44.85 (N=20)	47.15 (N=13)
30-39 YEARS OLD	42.00 (N=2)	45.92 (N=12)
40-49 YEARS OLD	50.00 (N=1)	64.00 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	41.86 (N=7)	62.83 (N=6)	32.43 (N=7)
30-39 YEARS OLD	75.00 (N=1)	40.75 (N=4)	32.67 (N=3)
40-49 YEARS OLD	50.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	65.67 (N=3)	54.50 (N=4)	33.00 (N=6)
30-39 YEARS OLD	62.75 (N=4)	45.17 (N=6)	14.50 (N=2)
40-49 YEARS OLD	75.00 (N=1)	------ (N=0)	58.50 (N=2)

TABLE 21: AGE DIFFERENCES ON VALUE

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.50 (N=10)	2.60 (N=10)	1.85 (N=13)
30-39 YEARS OLD	2.00 (N=5)	2.30 (N=10)	2.20 (N=5)
40-49 YEARS OLD	3.00 (N=2)	------ (N=0)	2.50 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	2.65 (N=20)	1.69 (N=13)
30-39 YEARS OLD	2.63 (N=8)	1.92 (N=12)
40-49 YEARS OLD	3.00 (N=1)	2.67 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.71 (N=7)	3.33 (N=6)	2.00 (N=7)
30-39 YEARS OLD	2.00 (N=1)	3.00 (N=4)	2.33 (N=3)
40-49 YEARS OLD	3.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.00 (N=3)	1.50 (N=4)	1.67 (N=6)
30-39 YEARS OLD	2.00 (N=4)	1.83 (N=6)	2.00 (N=2)
40-49 YEARS OLD	3.00 (N=1)	------ (N=0)	2.50 (N=2)

TABLE 22: AGE DIFFERENCES ON EXPECTED RETRIEVAL

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.18 (N=11)	2.10 (N=10)	2.31 (N=13)
30-39 YEARS OLD	2.00 (N=5)	1.90 (N=10)	2.20 (N=5)
40-49 YEARS OLD	1.50 (N=2)	------ (N=0)	2.50 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	2.19 (N=21)	2.23 (N=13)
30-39 YEARS OLD	2.00 (N=8)	2.00 (N=12)
40-49 YEARS OLD	1.00 (N=1)	2.33 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.13 (N=8)	2.17 (N=6)	2.29 (N=7)
30-39 YEARS OLD	1.00 (N=1)	2.00 (N=4)	2.33 (N=3)
40-49 YEARS OLD	1.00 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	2.33 (N=3)	2.00 (N=4)	2.33 (N=6)
30-39 YEARS OLD	2.25 (N=4)	1.83 (N=6)	2.00 (N=2)
40-49 YEARS OLD	2.00 (N=1)	------ (N=0)	---- (N=0)

TABLE 23: AGE DIFFERENCES ON EXPECTED FREQUENCY OF USE

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	0.82 (N=11)	0.70 (N=10)	0.31 (N=13)
30-39 YEARS OLD	0.80 (N=5)	0.56 (N=9)	0.40 (N=5)
40-49 YEARS OLD	0 (N=2)	------ (N=0)	0 (N=2)

	INSPEC	ERIC
20-29 YEARS OLD	0.86 (N=21)	0.15 (N=13)
30-39 YEARS OLD	0.75 (N=8)	0.45 (N=11)
40-49 YEARS OLD	0 (N=1)	0 (N=3)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	1.13 (N=8)	1.17 (N=6)	0.29 (N=7)
30-39 YEARS OLD	2.00 (N=1)	0.50 (N=4)	0.67 (N=3)
40-49 YEARS OLD	0 (N=1)	------ (N=0)	------ (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
20-29 YEARS OLD	0 (N=3)	0 (N=4)	0.33 (N=6)
30-39 YEARS OLD	0.50 (N=4)	0.60 (N=6)	0 (N=2)
40-49 YEARS OLD	0 (N=1)	------ (N=0)	0 (N=2)

TABLE 24: AGE DIFFERENCES ON TUTORIAL TIME

	COMMAND	MENU
20-29 YEARS OLD	159.41 (N=11)	203.65 (N=10)
30-39 YEARS OLD	155.90 (N=5)	202.70 (N=10)
40-49 YEARS OLD	165.00 (N=2)	------ (N=0)

	INSPEC	ERIC
20-29 YEARS OLD	188.32 (N=14)	164.79 (N=7)
30-39 YEARS OLD	214.20 (N=5)	173.55 (N=10)
40-49 YEARS OLD	175.00 (N=1)	155.00 (N=1)

	INSPEC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	162.31 (N=8)	223.00 (N=6)
30-39 YEARS OLD	166.50 (N=1)	226.12 (N=4)
40-49 YEARS OLD	175.00 (N=1)	------ (N=4)

	ERIC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	151.67 (N=3)	174.62 (N=4)
30-39 YEARS OLD	153.25 (N=4)	187.08 (N=6)
40-49 YEARS OLD	155.00 (N=1)	------ (N=0)

TABLE 25: AGE DIFFERENCES ON TUTORIAL ERRORS

	COMMAND	MENU
20-29 YEARS OLD	8.36 (N=11)	10.60 (N=10)
30-39 YEARS OLD	13.40 (N=5)	11.00 (N=10)
40-49 YEARS OLD	14.00 (N=2)	------ (N=0)

	INSPEC	ERIC
20-29 YEARS OLD	8.43 (N=14)	11.43 (N=7)
30-39 YEARS OLD	11.20 (N=5)	12.10 (N=10)
40-49 YEARS OLD	10.00 (N=1)	18.00 (N=1)

	INSPEC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	7.00 (N=8)	10.33 (N=6)
30-39 YEARS OLD	13.00 (N=1)	10.75 (N=4)
40-49 YEARS OLD	10.00 (N=1)	------ (N=0)

	ERIC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	12.00 (N=3)	11.00 (N=4)
30-39 YEARS OLD	13.50 (N=4)	11.17 (N=6)
40-49 YEARS OLD	18.00 (N=1)	------ (N=0)

TABLE 26: AGE DIFFERENCES ON RETENTION ERRORS

	COMMAND	MENU
20-29 YEARS OLD	5.73 (N=11)	7.30 (N=10)
30-39 YEARS OLD	5.20 (N=5)	6.00 (N=10)
40-49 YEARS OLD	9.00 (N=2)	------ (N=0)

	INSPEC	ERIC
20-29 YEARS OLD	8.50 (N=14)	2.43 (N=7)
30-39 YEARS OLD	12.20 (N=5)	2.50 (N=10)
40-49 YEARS OLD	15.00 (N=1)	3.00 (N=1)

	INSPEC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	6.88 (N=8)	10.67 (N=6)
30-39 YEARS OLD	13.00 (N=1)	12.00 (N=4)
40-49 YEARS OLD	15.00 (N=1)	------ (N=0)

	ERIC ONLY	
	COMMAND	MENU
20-29 YEARS OLD	2.67 (N=3)	2.25 (N=4)
30-39 YEARS OLD	3.25 (N=4)	2.00 (N=6)
40-49 YEARS OLD	3.00 (N=1)	------ (N=0)

TABLE 27: EFFECTS OF COMPUTER SOPHISTICATION ON GENERAL SATISFACTION

	COMMAND	MENU	MEDIATED CONTROLS
Novice	3.00 (N=1)	3.00 (N=1)	3.50 (N=4)
Below Average	4.00 (N=2)	3.50 (N=6)	2.67 (N=3)
Average	3.11 (N=9)	3.14 (N=7)	3.20 (N=5)
Above Average	2.80 (N=5)	3.17 (N=6)	3.00 (N=8)
Expert	4.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	3.00 (N=2)	3.50 (N=4)
Below Average	3.50 (N=2)	3.33 (N=9)
Average	3.08 (N=12)	3.22 (N=9)
Above Average	2.92 (N=13)	3.17 (N=6)
Expert	4.00 (N=1)	---- (N=0)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	3.00 (N=1)	3.00 (N=1)
Below Average	---- (N=0)	3.50 (N=2)	---- (N=0)
Average	3.00 (N=5)	3.00 (N=4)	3.30 (N=3)
Above Average	2.75 (N=4)	3.00 (N=3)	3.00 (N=6)
Expert	4.00 (N=1)	---- (N=0)	---- (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	3.00 (N=1)	---- (N=0)	3.67 (N=3)
Below Average	4.00 (N=2)	3.50 (N=4)	2.67 (N=3)
Average	3.25 (N=4)	3.33 (N=3)	3.00 (N=2)
Above Average	3.00 (N=1)	3.33 (N=3)	3.00 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 28: EFFECTS OF COMPUTER SOPHISTICATION ON RETRIEVAL SIZE

	COMMAND	MENU	MEDIATED CONTROLS
Novice	80.00 (N=1)	33.00 (N=1)	119.50 (N=4)
Below Average	88.50 (N=2)	107.33 (N=6)	117.00 (N=3)
Average	78.63 (N=8)	121.71 (N=7)	123.80 (N=5)
Above Average	74.20 (N=5)	71.50 (N=6)	104.25 (N=8)
Expert	97.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	91.50 (N=2)	102.00 (N=4)
Below Average	142.50 (N=2)	98.56 (N=9)
Average	102.67 (N=12)	108.50 (N=8)
Above Average	81.69 (N=13)	95.33 (N=6)
Expert	97.00 (N=1)	---- (N=0)

	INSPEC ONLY		
	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	33.00 (N=1)	150.00 (N=1)
Below Average	---- (N=0)	142.50 (N=2)	---- (N=0)
Average	78.20 (N=5)	130.00 (N=4)	107.00 (N=3)
Above Average	62.50 (N=4)	60.00 (N=3)	105.33 (N=6)
Expert	97.00 (N=1)	---- (N=0)	---- (N=0)

	ERIC ONLY		
	COMMAND	MENU	MEDIATED CONTROLS
Novice	80.00 (N=1)	---- (N=0)	109.33 (N=3)
Below Average	88.50 (N=2)	89.75 (N=4)	117.00 (N=3)
Average	79.33 (N=3)	110.67 (N=3)	149.00 (N=2)
Above Average	129.00 (N=1)	83.00 (N=3)	101.00 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 29: EFFECTS OF COMPUTER SOPHISTICATION ON RELEVANCE

	COMMAND	MENU	MEDIATED CONTROLS
Novice	75.00 (N=1)	61.00 (N=1)	41.00 (N=4)
Below Average	95.00 (N=2)	79.67 (N=6)	14.67 (N=3)
Average	84.33 (N=9)	71.43 (N=7)	57.80 (N=5)
Above Average	53.60 (N=5)	58.00 (N=6)	58.75 (N=8)
Expert	72.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	54.00 (N=2)	48.00 (N=4)
Below Average	97.50 (N=2)	57.44 (N=9)
Average	68.50 (N=12)	80.67 (N=9)
Above Average	57.23 (N=13)	57.00 (N=6)
Expert	72.00 (N=1)	---- (N=0)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	61.00 (N=1)	47.00 (N=1)
Below Average	---- (N=0)	97.50 (N=2)	---- (N=0)
Average	78.60 (N=5)	68.75 (N=4)	51.33 (N=3)
Above Average	53.50 (N=4)	66.33 (N=3)	55.17 (N=6)
Expert	72.00 (N=1)	---- (N=0)	---- (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	75.00 (N=1)	---- (N=0)	39.00 (N=3)
Below Average	95.00 (N=2)	70.75 (N=4)	14.67 (N=3)
Average	91.50 (N=4)	75.00 (N=3)	67.50 (N=2)
Above Average	54.00 (N=1)	49.67 (N=3)	69.50 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 30: EFFECTS OF COMPUTER SOPHISTICATION ON REFERENCES ACTUALLY USED

	COMMAND	MENU	MEDIATED CONTROLS
Novice	75.00 (N=1)	61.00 (N=1)	28.00 (N=4)
Below Average	82.50 (N=2)	63.83 (N=6)	19.67 (N=3)
Average	55.00 (N=8)	42.29 (N=7)	40.80 (N=5)
Above Average	37.80 (N=5)	48.17 (N=6)	36.75 (N=8)
Expert	72.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	47.00 (N=2)	38.50 (N=4)
Below Average	75.00 (N=2)	50.78 (N=9)
Average	41.27 (N=11)	54.00 (N=9)
Above Average	39.46 (N=13)	43.17 (N=6)
Expert	72.00 (N=1)	---- (N=0)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	61.00 (N=1)	33.00 (N=1)
Below Average	---- (N=0)	75.00 (N=2)	---- (N=0)
Average	49.50 (N=4)	36.50 (N=4)	36.67 (N=3)
Above Average	37.00 (N=4)	61.00 (N=3)	30.33 (N=6)
Expert	72.00 (N=1)	---- (N=0)	---- (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	75.00 (N=1)	---- (N=0)	26.33 (N=3)
Below Average	82.50 (N=2)	58.25 (N=4)	19.67 (N=3)
Average	60.50 (N=4)	50.00 (N=3)	47.00 (N=2)
Above Average	41.00 (N=1)	35.33 (N=3)	56.00 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 31: EFFECTS OF COMFUTER SOPHISTICATION ON VALUE

	COMMAND	MENU	MEDIATED CONTROLS
Novice	3.00 (N=1)	3.00 (N=1)	2.25 (N=4)
Below Average	2.00 (N=2)	2.17 (N=6)	2.00 (N=3)
Average	2.50 (N=8)	2.57 (N=7)	1.80 (N=5)
Above Average	2.40 (N=5)	2.50 (N=6)	2.00 (N=8)
Expert	2.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	2.50 (N=2)	2.50 (N=4)
Below Average	3.00 (N=2)	1.89 (N=9)
Average	2.64 (N=11)	2.00 (N=9)
Above Average	2.69 (N=13)	1.33 (N=6)
Expert	2.00 (N=1)	---- (N=0)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	3.00 (N=1)	2.00 (N=1)
Below Average	---- (N=0)	3.00 (N=2)	---- (N=0)
Average	3.00 (N=4)	2.75 (N=4)	2.00 (N=3)
Above Average	2.50 (N=4)	4.00 (N=3)	2.17 (N=6)
Expert	2.00 (N=1)	---- (N=0)	---- (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	3.00 (N=1)	---- (N=0)	2.33 (N=3)
Below Average	2.00 (N=2)	1.75 (N=4)	2.00 (N=3)
Average	2.00 (N=4)	2.33 (N=3)	1.50 (N=2)
Above Average	2.00 (N=1)	1.00 (N=3)	1.50 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 32: EFFECTS OF COMPUTER SOPHISTICATION ON EXPECTED RETRIEVAL

	COMMAND	MENU	MEDIATED CONTROLS
Novice	2.00 (N=1)	2.00 (N=1)	2.50 (N=4)
Below Average	3.00 (N=2)	2.00 (N=6)	1.67 (N=3)
Average	2.00 (N=9)	2.29 (N=7)	2.60 (N=5)
Above Average	1.60 (N=5)	1.67 (N=6)	2.25 (N=8)
Expert	3.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	2.00 (N=2)	2.50 (N=4)
Below Average	2.00 (N=2)	2.11 (N=9)
Average	2.25 (N=12)	2.22 (N=9)
Above Average	1.92 (N=13)	1.83 (N=6)
Expert	3.00 (N=1)	---- (N=0)

INSPEC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	2.00 (N=1)	2.00 (N=1)
Below Average	---- (N=0)	2.00 (N=2)	---- (N=0)
Average	2.00 (N=5)	2.25 (N=4)	2.67 (N=3)
Above Average	1.50 (N=4)	2.00 (N=3)	2.17 (N=6)
Expert	3.00 (N=1)	---- (N=0)	---- (N=0)

ERIC ONLY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	2.00 (N=1)	---- (N=0)	2.67 (N=3)
Below Average	3.00 (N=2)	2.00 (N=4)	1.67 (N=3)
Average	2.00 (N=4)	2.33 (N=3)	2.50 (N=2)
Above Average	2.00 (N=1)	1.33 (N=3)	2.50 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 33: EFFECTS OF COMPUTER SOFHISTICATION ON EXPECTED FREQUENCY

	COMMAND	MENU	MEDIATED CONTROLS
Novice	0.00 (N=1)	2.00 (N=1)	0.25 (N=4)
Below Average	0.00 (N=2)	0.50 (N=6)	0.67 (N=3)
Average	0.44 (N=9)	0.83 (N=6)	0.0 (N=5)
Above Average	1.00 (N=5)	0.33 (N=6)	0.38 (N=8)
Expert	4.00 (N=1)	---- (N=0)	---- (N=0)

	INSPEC	ERIC
Novice	1.50 (N=2)	0.00 (N=4)
Below Average	0.50 (N=2)	0.44 (N=9)
Average	0.58 (N=12)	0.25 (N=8)
Above Average	0.69 (N=13)	0.17 (N=6)
Expert	4.00 (N=1)	---- (N=0)

	INSPEC ONLY		
	COMMAND	MENU	MEDIATED CONTROLS
Novice	---- (N=0)	2.00 (N=1)	1.00 (N=1)
Below Average	---- (N=0)	0.50 (N=2)	---- (N=0)
Average	0.40 (N=5)	1.25 (N=4)	0.00 (N=3)
Above Average	1.25 (N=4)	0.33 (N=3)	0.50 (N=6)
Expert	4.00 (N=1)	---- (N=0)	---- (N=0)

	ERIC ONLY		
	COMMAND	MENU	MEDIATED CONTROLS
Novice	0.00 (N=1)	---- (N=0)	0.00 (N=3)
Below Average	0.00 (N=2)	0.50 (N=4)	0.67 (N=3)
Average	0.50 (N=4)	0.00 (N=2)	0.00 (N=2)
Above Average	0.00 (N=1)	0.33 (N=3)	0.00 (N=2)
Expert	---- (N=0)	---- (N=0)	---- (N=0)

TABLE 34: EFFECTS OF COMPUTER SOPHISTICATION ON TUTORIAL TIME

	COMMAND	MENU
Novice	155.00 (N=1)	187.00 (N=1)
Below Average	145.00 (N=2)	198.67 (N=6)
Average	160.39 (N=9)	223.64 (N=7)
Above Average	164.70 (N=5)	186.50 (N=6)
Expert	153.00 (N=1)	---- (N=0)

	INSPEC	ERIC
Novice	187.00 (N=1)	155.00 (N=1)
Below Average	223.00 (N=2)	172.33 (N=6)
Average	199.56 (N=9)	173.29 (N=7)
Above Average	185.79 (N=7)	160.50 (N=4)
Expert	153.00 (N=1)	---- (N=0)

	INSPEC ONLY	
	COMMAND	MENU
Novice	---- (N=0)	187.00 (N=1)
Below Average	---- (N=0)	223.00 (N=2)
Average	160.70 (N=5)	248.12 (N=4)
Above Average	170.87 (N=4)	205.67 (N=3)
Expert	153.00 (N=1)	---- (N=0)

	ERIC ONLY	
	COMMAND	MENU
Novice	155.00 (N=1)	---- (N=0)
Below Average	144.00 (N=2)	186.50 (N=4)
Average	160.00 (N=4)	191.00 (N=3)
Above Average	140.00 (N=1)	167.33 (N=3)
Expert	---- (N=0)	---- (N=0)

TABLE 35: EFFECTS OF COMPUTER SOPHISTICATION ON TUTORIAL ERRORS

	COMMAND	MENU
Novice	18.00 (N=1)	10.00 (N=1)
Below Average	16.50 (N=2)	11.67 (N=6)
Average	10.22 (N=9)	11.14 (N=7)
Above Average	8.40 (N=5)	9.67 (N=6)
Expert	2.00 (N=1)	---- (N=0)

	INSPEC	ERIC
Novice	10.00 (N=1)	18.00 (N=1)
Below Average	11.00 (N=2)	13.50 (N=6)
Average	10.44 (N=9)	10.86 (N=7)
Above Average	8.00 (N=7)	11.00 (N=4)
Expert	2.00 (N=1)	---- (N=0)

	INSPEC ONLY	
	COMMAND	MENU
Novice	---- (N=0)	10.00 (N=1)
Below Average	---- (N=0)	11.00 (N=2)
Average	9.80 (N=5)	11.25 (N=4)
Above Average	7.00 (N=4)	9.33 (N=3)
Expert	2.00 (N=1)	---- (N=0)

	ERIC ONLY	
	COMMAND	MENU
Novice	18.00 (N=1)	---- (N=0)
Below Average	16.50 (N=2)	12.00 (N=4)
Average	10.75 (N=4)	11.00 (N=3)
Above Average	14.00 (N=1)	10.00 (N=3)
Expert	---- (N=0)	---- (N=0)

TABLE 36: EFFECTS OF COMPUTER SOPHISTICATION ON RETENTION ERRORS

	COMMAND	MENU
Novice	3.00 (N=1)	9.00 (N=1)
Below Average	3.50 (N=2)	4.83 (N=6)
Average	6.33 (N=9)	7.86 (N=7)
Above Average	7.40 (N=5)	6.67 (N=6)
Expert	3.00 (N=1)	---- (N=0)

	INSPEC	ERIC
Novice	9.00 (N=1)	3.00 (N=1)
Below Average	11.50 (N=2)	2.17 (N=6)
Average	10.33 (N=9)	2.71 (N=7)
Above Average	9.57 (N=7)	2.50 (N=4)
Expert	3.00 (N=1)	---- (N=0)

	INSPEC ONLY	
	COMMAND	MENU
Novice	---- (N=0)	9.00 (N=1)
Below Average	---- (N=0)	11.50 (N=2)
Average	9.00 (N=5)	12.00 (N=4)
Above Average	8.75 (N=4)	10.67 (N=3)
Expert	3.00 (N=1)	---- (N=0)

	ERIC ONLY	
	COMMAND	MENU
Novice	3.00 (N=1)	---- (N=0)
Below Average	3.50 (N=2)	1.50 (N=4)
Average	3.00 (N=4)	2.33 (N=2)
Above Average	2.00 (N=1)	2.67 (N=3)
Expert	---- (N=0)	---- (N=0)

TABLE 37: ANALYSIS OF VARIANCE FOR SEX DIFFERENCES

	-MAIN EFFECTS OF SEX- F(df)	Signif
USER SATISFACTION	0.173(1)	0.679
RETRIEVAL SIZE	0.057(1)	0.812
RELEVANCE	1.971(1)	0.167
REFS ACTUALLY USED	8.628(1)	0.005
VALUE	4.465(1)	0.040
EXPECTED RETRIEVAL	1.490(1)	0.228
EXPECTED FREQ OF USE	0.014(1)	0.907
TUTORIAL TIME	1.547(1)	0.222
TUTORIAL ERRORS	6.725(1)	0.014
RETENTION ERRORS	0.603(1)	0.443

TABLE 38: ANALYSIS OF VARIANCE FOR AGE DIFFERENCES

	-MAIN EFFECTS OF AGE- F (DF)	SIGNIF
GENERAL SATISFACTION	0.564 (2)	0.572
RETRIEVAL SIZE	0.223 (2)	0.801
RELEVANCE	0.103 (2)	0.903
REFS ACUTALLY USED	1.292 (2)	0.284
VALUE	1.466 (2)	0.241
EXPECTED RETRIEVAL	0.472 (2)	0.626
EXPECTED FREQUENCY OF USE	0.339 (2)	0.714
TUTORIAL TIME	0.428 (2)	0.655
TUTORIAL ERRORS	1.274 (2)	0.293
RETENTION ERRORS	2.084 (2)	0.141

TABLE 39: ANALYSIS OF VARIANCE FOR EFFECTS OF SOPHISTICATION

	-MAIN EFFECTS OF AGE- ---SOPHISTICATION---- F (DF)	SIGNIF
GENERAL SATISFACTION	NOT SIGNI	
RETRIEVAL SIZE	1.134 (4)	0.351
RELEVANCE	0.873 (4)	0.487
REFS ACUTALLY USED	0.536 (4)	0.710
VALUE	0.706 (4)	0.592
EXPECTED RETRIEVAL	1.171 (4)	0.333
EXPECTED FREQUENCY OF USE	3.204 (4)	0.021
TUTORIAL TIME	10.009 (4)	0.418
TUTORIAL ERRORS	1.839 (4)	0.147
RETENTION ERRORS	0.917 (4)	0.466

TABLE 40: COMPUTER SOPHISTICATION CORRELATION (PEARSON COEFFICIENTS)

	# OF COMPUTING COURSES	# OF COURSES USING COMPUTERS	YEARS OF COMPUTING EXPERIENCE	HOURS PER WEEK OF COMPUTER USE
GENERAL SATISFACTION	-.1054 (P=.523)	-.2911 (P=.072)	-.1937 (P=237)	-.3123 (P=.053)
RETRIEVAL SIZE	.0141 (P=.933)	-.0574 (P=.732)	.1351 (P=.419)	.0646 (P=.699)
RELEVANCE (%)	.0735 (P=.657)	.0732 (P=.658)	.1262 (P=.444)	.0879 (P=.594)
REFS ACTUALLY USED (%)	-.1022 (P=.532)	-.0829 (P=.616)	-.1052 (P=.524)	-.1177 (P=.475)
VALUE	.1046 (P=.526)	.0342 (P=.836)	.0803 (P=.627)	-.0327 (P=.822)
EXPECTED RETRIEVAL	-.0360 (P=.842)	-.1772 (P=.281)	-.1459 (P=.375)	-.2323 (P=.155)
EXPECTED FREQ OF USE	.0587 (P=.726)	.3374* (P=.037)	-.0153 (P=.927)	.0947 (P=.572)
TUTORIAL TIME	-.2304 (P=.279)	-.1455 (P=.498)	.3372 (P=.107)	.1359 (P=.527)
TOTAL TEST ERRORS	-.4253*(P=.038)	-.3338 (P=.111)	-.0865 (P=.683)	-.0526 (P=.807)
RETENTION ERRORS	-.0649 (P=.763)	.2991 (P=.156)	.5426* (P=.006)	.0758 (P=.725)
TOTAL TYPE COMMANDS	.3074 (P=.144)	.2276 (P=.283)	.1150 (P=.593)	.0623 (P=.772)
USE OF FORMAT 6	.1235 (P=.565)	.3085 (P=.142)	.1429 (P=.505)	.3364 (P=.108)

*two tailed test

LIST OF APPENDICES

1. Application Questionnaire

2. User Satisfaction Questionnaire

3. Online Searching Exam 1C (First Quiz - Command Inspec version)

4. Online Searching Exam 2C (Second Quiz - Command Inspec version)

5. Online Searching Exam 3C (Third Quiz - Command Inspec version)

6. Online Searching Exam 1M (First Quiz - Menu Inspec version)

7. Online Searching Exam 2M (Second Quiz - Menu Inspec version)

8. Online Searching Exam 3M (Third Quiz - Menu Inspec version)

9. End-User Searching Workbook (Inspec Command version)

10. End-User Searching Workbook (Inspec Menu version)

APPENDIX 1

Free Computer Literature Searches
Application Questionnaire

Name_____**Phone**_____

Department_____

Academic Status: Master's candidate_____
Doctoral candidate_____
Other (state)_____

Sex: Male_____
Female_____

Age: 20-29_____ 30-39_____ 40-49_____ Over 49_____

Computer Experience:

_____ Number of computing (programming) courses taken
_____ Number of other courses taken which require use of a computer (statistics courses, etc.)
_____ Years of experience using computers
_____ Hours per week using computers

Do you own, or otherwise make regular use of, a microcomputer?

Yes_____ No_____

How sophisticated a computer user do you consider yourself to be? Please mark an X on the following scale:

-_____-_____-_____-_____-_____-

Not sophisticated Very sophisticated

Information Retrieval Experience:

Have you ever had a computer literature search done for you?
Yes_____ No_____

If yes, how many searches have you had done?_____

Have you ever searched an information retrieval system yourself?
Yes_____ No_____

If yes, how many searches have you done?_____

Have you ever used SOCRATES, the online catalog for the Stanford Libraries?
Yes_____ No_____

If yes, how often do you use it? _____times per month

Please describe your search topic:

What is the purpose of your search?
_____Master's thesis
_____Doctoral dissertation
_____Other (state)_____

Describe the subject/topic you want searched in a clear and precise statement. Here are two examples: (1) "The effects of any mutation on the eye color of the fruit fly", (2) "How importing steel has effected the U.S. economy."

_____
_____
_____
_____
_____
_____

List a few keywords you would use in searching for your topic:

_____
_____
_____

What indexes or databases might be appropriate for searching your topic?

_____
_____

What is the scope of your search?
_____Comprehensive (find maximum amount of related material, even if you bring up a lot of irrelevant material with it).
_____Very precise (find a limited amount of highly relevant material, even if more general, related material is not retrieved).

APPENDIX 2

name_____

date_____

USER SATISFACTION QUESTIONNAIRE

SEARCH RESULTS

Please review the printout of your search before answering the following quesions:

1. What is the total number of references printed out?_____

2. Of these how many appear to be relevant to your search? (*relevant -- satisfies your stated information needs -- more than of just general interest to your studies) _____

3. How many references from your printout do you intend to follow up by locating the full article? _____

4. How many relevant references did you get printed out in comparison to what you expected?

(Check One)

Fewer than expected? _____

About the same as expected? _____

More than expected? _____

VALUE

1. This was a free search. If it were not free, what is the maximum you would be willing to pay?

Less than $15 _____

$15 - $30 _____

$31 - $45 _____

$46 - $70 _____

More than $70 _____

2. Do you plan to get your own DIALOG account?

Yes _____

No _____

If "yes", how often do you expect to use your account? (Check One)

Less than once a month _____

1-2 times a month _____

3-4 times a month _____

More than 4 times a month _____

Comments (use other side of paper if needed):

_____

_____

_____

GENERAL SATISFACTION

In comparison with your expectations, to what extent did the results satisfy the information need with which you came? (Check One)

Exceeded my expectations _____

Met my expectations _____

Somewhat disappointed me _____

Disappointed me very much _____

We would like to be able to get in touch with you in 6 months to check on your continuing satisfaction with this training. Please write your address below.

_____

_____

APPENDIX 3

name_____

date_____

ONLINE SEARCHING EXAM (1)

Please answer the questions in the order given. It should take you 30 minutes to complete the exam.

1. What selection from the menu do you choose if you want to get into the DIALOG system? (choose one)

   -- a. Enter the Universal Online searcher.

   -- b. Enter the Personal Data Manager.

   -- c. Receive instructions on the use of Sci-Mate.

   -- d. Leave the Sci-Mate system.

2. Suppose that instead of typing SEMICONDUCTOR you've typed SEMICODNUCTOR and you recognize it before pressing the ENTER key. What key should you use to correct your error? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE

3. What key do you press to begin the LOGOFF process? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE key

4. Of the following topics, which is most appropriate for searching in INSPEC? (select one)

   -- a. The melting point of aluminum.

   -- b. Computer-aided design of large scale integrated circuits?

   -- c. Electronics and computers.

   -- d. Physical properties.

5. Identify the main concepts of the following search topic:

   STUDY OF FLIGHT CONTROL SYSTEMS FOR POWERED-LIFT AIRCRAFT AND ROTORCRAFT

   Concepts: _____

   _____

   _____

   _____

6. What are the main concepts of the following literature search topic? (select one)

   OXIDATION OF CdTe AT CONTACTS

   __a. Cd
   Te

   __b. Oxidation
   CdTe
   Contacts

   __c. Oxidation
   Cd
   Contacts

   __d. Cd
   Contacts

7. List at least two synonyms or variations for each main concept for the following topic:

COMPUTER-AIDED DESIGN OF MICROCOMPUTERS

computer-aided design	microcomputers
_____	_____
_____	_____
_____	_____

8. Answer each of the following TRUE/FALSE questions by circling the T or F.

T F a. The OR operator results in a larger output of references than the AND operator.

T F b. Terms that are connected in a search statement by OR have to occur in the same retrieved reference.

T F c. The OR operator is used to limit a search.

T F d. Terms that are connected in a search statement by AND have to occur in the same retrieved reference.

T F e. Combining terms by AND decreases the specificity of the search.

9. What command would you choose to get help while doing a search? (select one)

-- a. HELP

-- b. CTRL-S

-- c. AID

-- d. FIND

10. What symbol do you enter directly before the command to indicate that you need assistance with that command? (select one)

-- a. !

-- b. B

-- c. ?

-- d. $

11. The system provides which of the following in response to SELECT STEPS command? (select all that apply)

-- a. Separate set numbers assigned to each step in the search statement

-- b. A count of the number of references for each search element in the statement

-- c. A set number for the final result

-- d. A list of synonyms for each term

12. Which of the following statements represents a correct way to SELECT from previously formed sets? (select one)

-- a. 1 AND 2

-- b. SELECT S 1 2

-- c. SELECT S1 2

-- d. SS S1 OR S2

13. Which of the following are correct abbreviations for SELECT STEPS? (select all that apply)

-- a. S STEPS

-- b. SS

-- c. S S

-- d. SEL S

14. Which is the proper structure for the TYPE command? (select one)

-- a. T format/set #/item #'s

-- b. T set #/format/item #'s

-- c. T format/item #'s/set #

-- d. T item #`s/set #/format

15. What format would you ordinarily use to inspect a search result online to assess the appropriateness of the result?

-- a. Titles only

-- b. Titles and abstracts

-- c. Author, title, journal

-- d. Full reference

16. When a list of references is displayed, the first reference will be: (select one)

-- a. Older than the 10th reference

-- b. More recently added to INSPEC than the 10th reference

-- c. Longer than the 10th reference

-- d. More relevant than the 10th reference.

17. The function of the DISPLAY SETS command is to: (select one)

-- a. Allow a searcher to review his/her strategy

-- b. List the references retrieved in a given set

-- c. Define your own display format

-- d. Erase previous sets

18. Which of the following are correct abbreviations for DISPLAY SETS? (select all that apply)

-- a. D SETS

-- b. DS

-- c. D S

-- d. DISP S

19. The command SS LARGE(W)SCALE requires that:
(select one)

-- a. The words LARGE and SCALE must appear somewhere in a given reference, but not necessarily in the same field.

-- b. Both the words LARGE and SCALE must appear in the title.

-- c. The word LARGE must precede the word SCALE in the reference.

-- d. The words LARGE and SCALE must appear next to each other in the reference, but in either order.

20. What command retrieves all references in which the phrase EXPERT SYSTEM appears in either the title, abstract, identifier, or descriptor fields?
(select all that apply)

-- a. SS EXPERT ADJ SYSTEM

-- b. SS EXPERT SYSTEM/TI,AB,DE

-- c. SS EXPERT(W)SYSTEM

-- d. SS EXPERT ADJ SYSTEM/TI,AB,DE

21. In comparing the search statements SS BIG AND BANG and SS BIG(W)BANG, which of the following are true?
(select all that are true)

-- a. SS BIG(W)BANG will retrieve fewer references.

-- b. A greater concentration of the references retrieved by SS BIG(W)BANG will be relevant to the "big bang theory", compared to the references retrieved by SS BIG AND BANG.

-- c. SS BIG NOT BANG would be a better search for "big bang theory" than either of them.

-- d. Both statements will search only the Basic Index.

22. Which command is likely to retrieve the greatest number of references? (select one)

-- a. SS ROBOT

-- b. SS ROBOTICS

-- c. SS ROBOT?

-- d. SS ROBOTS OR ROBOT

23. Which word would NOT be matched by the search statement "SS COLOR?" ? (select one)

-- a. COLORS

-- b. COLOR

-- c. COLORATION

-- d. COLOUR

24. Which command is likely to retrieve the most references NOT RELEVANT to the topic of "fiber optics"? (select one)

-- a. SS FIBRE? AND OPTIC?

-- b. SS FIBER? AND OPTIC?

-- c. SS FIBRE? AND OPTICS

-- d. SS FIB? AND OPTIC?

25. What parts of a reference are included in the DIALOG Basic Index? (select all that apply)

-- a. author

-- b. title

-- c. abstract terms

-- d. journal title keywords

-- e. descriptors

26. Which command will initiate a search of the entire Basic Index? (select all that apply)

-- a. SS LASER

-- b. SS LASER/TI

-- c. SS LASER/AB

-- d. SS LASER/TI,AB,DE

27. Which fields contain terms assigned by professional indexers, rather than by the authors of the journals covered in INSPEC? (select all that apply)

-- a. descriptor field

-- b. index field

-- c. title field

-- d. thesaurus field

28. Which of the following search statements is most likely to retrieve references in which CADMIUM is a primary topic? (select one)

-- a. SS CADMIUM/TI

-- b. SS CADMIUM/AB

-- c. SS CADMIUM/TI,AB

-- d. SS CADMIUM?TI,AB

APPENDIX 4

name_____

date_____

ONLINE SEARCHING EXAM (2)

Please answer the questions in the order given. It should take you 30 minutes to complete the exam.

1. What is the correct command to list the number of references for authors whose last names begin with the letters "Self"? (select one)

   -- a. E SELF

   -- b. E AU=SELF

   -- c. SS SELF?

   -- d. BEGIN AU=SELF

2. The EXPAND command allows a searcher to: (select one)

   -- a. Browse through an index for words that begin with a specified string of letters

   -- b. Increase the comprehensiveness of a search

   -- c. Display a result in a longer format

   -- d. Identify synonyms for a term

3. The EXPAND command is useful in searching for articles by a particular author because: (select all that apply)

   -- a. The entries for a given author may vary slightly

   -- b. The EXPAND command displays the years during which a given author was writing

   -- c. The EXPAND command improves computer response time

   -- d. The EXPAND command identifies when an author has changed his or her name.

4. Suppose you EXPAND on the author Self and the system presents the following:

```
 1 E1 AU=SELF, R.
36 E2 AU=SELF, S.
23 E3 AU=SELF, S.A.
 1 E4 AU=SELF, W.B.
 1 E5 AU=SELF, W.R.
11 E6 AU=SELFRIDGE, A.R.
```

What command would be the most efficient and effective way to retrieve papers by Sarah Anson Self? (select one)

-- a. S E1-E6

-- b. SS E3 OR E4

-- c. SS SELF, SARAH/AU

-- d. SS E3

5. What command should you issue to see a continuation of the EXPAND display? (select one)

   -- a. PAGE

   -- b. CONTINUE

   -- c. MORE

   -- d. EXTEND

6. What techniques might you use to discover all the searchable fields in INSPEC? (select all that apply)

   -- a. Type E INSPEC

   -- b. Type EXPLAIN INSPEC

   -- c. Type ?FIELD13

   -- d. Type EXPAND FIELDS

7. Which of the following is correct for retrieving references by J. Linville in INSPEC? (select all that apply)

   -- a. SS AU=J. LINVILLE

   -- b. SS AU=LINVILLE, J.

   -- c. SS LINVILLE, J./AU

   -- d. SS LINVILLE, J.

8. Which of the following might you use to retrieve references to REVIEW ARTICLES on VLSI? (select one)

   -- a. SS VLSI AND PY=REVIEW

   -- b. SS VLSI AND TC=GENERAL?

   -- c. SS VLSI AND REVIEW

   -- d. SS VLSI AND GENERAL(W)REVIEW

9. What command is likely to identify the most articles by Richard G. Harboe-Sorenson? (select one)

-- a. SS AU=HARBOE-SORENSON, RICHARD G.

-- b. SS AU=HARBOE-SORENSON, R.G.

-- c. EXPAND AU=HARBOE

-- d. EXPAND AU=RICHARD G.H. SORENSON

10. Suppose you want references on expert systems for medical diagnosis. Your original search looks like this:

```
SS EXPERT AND SYSTEM?
          1   1465 EXPERT
          2 399566 SYSTEM?
          3   1179 1 AND 2
SS MED? OR DIAG?
          4  61286 MED?
          5  50529 DIAG?
          6 107237 4 OR 5
SS S3 AND S6
          7    265 3 AND 6
```

Which of the following would NOT narrow set 7 to a more revelant set of references? (select the two that apply)

-- a. SS S7 AND EXPERT(W)SYSTEM

-- b. SS S7 AND MEDIC?/TI OR DIAGNOS?/TI

-- c. SS S7 OR ARTIFICIAL(W)INTELLIGENCE

-- d. SS S7 AND EXPERT/TI

11. Suppose you want references on the Viking mission to Mars. You've begun with the search statement leading to Set 4:

```
SS VIKING/TI AND MISSION AND MARS
          1    254 VIKING/TI
          2   2145 MISSION
          3   1558 MARS
          4     39 1 AND 2 AND 3
```

Which of the following would broaden and which would narrow the search? For each statement, circle B for BROADEN of N for NARROW.

B N a.
```
SS VIKING AND MARS
          5    532 VIKING
          6   1558 MARS
          7    468 5 AND 6
SS S4 OR S7
```

B N b.
```
SS VIKING/TI AND MISSION/TI AND MARS
          9    254 VIKING/TI
         10    328 MISSION/TI
         11   1558 MARS
         12     17 9 AND 10 AND 11
SS S4 AND S12
```

B N c.
```
SS VIKING AND MARS/TI
         16    532 VIKING
         17    697 MARS/TI
         18    239 16 AND 17
SS S4 OR S18
```

B N d.
```
SS S4 AND MISSION/TI
```

B N f.
```
SS MARS/TI AND MISSION/TI
         22    697 MARS/TI
         23    328 MISSION/TI
         24     11 22 AND 23
SS S4 AND S24
```

12. Which of the following is the LEAST appropriate use of the NOT operator? (select one)

-- a. You want articles on achromatic (i.e., without color) pattern recognition and your search statement is:
SS PATTERN(W)RECOGNITION NOT COLOR

-- b. You want a list of references from Set 6 that excludes the references in Set 4, since Set 4 has already been printed out. Your search is:
SS S6 NOT S4

-- c. You want the references in Set 6 that were not written by J.F. Gibbons, because you are confident that you are already familiar with Gibbons' work. Your search statement is:
SS S6 NOT AU=GIBBONS, J.F.

13. Which one of the following would help you find the prefix for the field containing an author's reprint address? (select all that apply)

-- a. ?REPRINT

-- b. ?FIELD13

-- c. List of journals covered in INSPEC

-- d. Displaying a full reference online

14. Which one of the following CANNOT be searched in INSPEC? (select all that apply)

-- a. author's name

-- b. author's reprint address

-- c. words in title or abstract articles

-- d. words in results section of articles

-- e. descriptors and identifiers assigned by professional indexers

15. Which of the following is the correct search statement to find references that mention the chemical formula for water?

__ a. SS GAAS

__ b. SS H(W)SUB(W)2(W)O

__ c. SS H(W)2(W)O

__ d. SS SUP(W)H(W)2(W)O

16. Answer the following TRUE/FALSE questions by circling T or F.

T F a. The NOT operator increases the amount of retrieval.

T F b. The NOT operator may eliminate relevant references.

17. Which of the following fields might be useful for searching by OTHER THAN subject? (select all that apply)

__ a. descriptor field (/DE)

__ b. author field (AU=)

__ c. abstract field (/AB)

__ d. author's affiliation field (CS=)

APPENDIX 5

name_____

date_____

ONLINE SEARCHING EXAM (3)

Please answer the questions in the order given.

1. What selection from the menu do you choose if you want to get into the DIALOG system? (choose one)

   -- a. Enter the Universal Online searcher.

   -- b. Enter the Personal Data Manager.

   -- c. Receive instructions on the use of Sci-Mate.

   -- d. Leave the Sci-Mate system.

2. Suppose that instead of typing SEMICONDUCTOR you've typed SEMICODNUCTOR and you recognize it before pressing the ENTER key. What key should you use to correct your error? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE

3. What key do you press to begin the LOGOFF process? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE key

4. Answer each of the following TRUE/FALSE questions by circling the T or F.

T F a. The OR operator results in a larger output of references than the AND operator.

T F b. Terms that are connected in a search statement by OR have to occur in the same retrieved reference.

T F c. The OR operator is used to limit a search.

T F d. Terms that are connected in a search statement by AND have to occur in the same retrieved reference.

T F e. Combining terms by AND decreases the specificity of the search.

T F f. The NOT operator increases the amount of retrieval.

T F g. The NOT operator may eliminate relevant references.

5. Which of the following statements represents a correct way to SELECT from previously formed sets? (select one)

-- a. 1 AND 2

-- b. SELECT S 1 2

-- c. SELECT S1 2

-- d. SS S1 OR S2

6. Which is the proper structure for the TYPE command? (select one)

-- a. T format/set #/item #'s

-- b. T set #/format/item #'s

-- c. T format/item #'s/set #

-- d. T item #`s/set #/format

7. When a list of references is displayed, the first reference will be: (select one)

   -- a. Older than the 10th reference

   -- b. More recently added to INSPEC than the 10th reference

   -- c. Longer than the 10th reference

   -- d. More relevant than the 10th reference.

8. The function of the DISPLAY SETS command is to: (select one)

   -- a. Allow a searcher to review his/her strategy

   -- b. List the references retrieved in a given set

   -- c. Define your own display format

   -- d. Erase previous sets

9. Suppose you EXPAND on the author Self and the system presents the following:

```
 1 E1 AU=SELF, R.
36 E2 AU=SELF, S.
23 E3 AU=SELF, S.A.
 1 E4 AU=SELF, W.B.
 1 E5 AU=SELF, W.R.
11 E6 AU=SELFRIDGE, A.R.
```

What command would be the most efficient and effective way to retrieve papers by Sarah Anson Self? (select one)

   -- a. S E1-E6

   -- b. SS E3 OR E4

   -- c. SS SELF, SARAH/AU

   -- d. SS E3

10. The command SS LARGE(W)SCALE requires that:
(select one)

-- a. The words LARGE and SCALE must appear somewhere in a given reference, but not necessarily in the same field.

-- b. Both the words LARGE and SCALE must appear in the title.

-- c. The word LARGE must precede the word SCALE in the reference.

-- d. The words LARGE and SCALE must appear next to each other in the reference, but in either order.

11. Which of the following is correct for retrieving references by J. Linville in INSPEC? (select all that apply)

-- a. SS AU=J. LINVILLE

-- b. SS AU=LINVILLE, J.

-- c. SS LINVILLE, J./AU

-- d. SS LINVILLE, J.

12. Suppose you want references on expert system for medical diagnosis. Your original search looks like this:

```
SS EXPERT AND SYSTEM?
          1   1465 EXPERT
          2 399566 SYSTEM?
          3   1179 1 AND 2
SS MED? OR DIAG?
          4  61286 MED?
          5  50529 DIAG?
          6 107237 4 OR 5
SS S3 AND S6
          7    265 3 AND 6
```

Which of the following would NOT narrow set 7 to a more revelant set of references? (select the two that apply)

-- a. SS S7 AND EXPERT(W)SYSTEM

-- b. SS S7 AND MEDIC?/TI OR DIAGNOS?/TI

-- c. SS S7 OR ARTIFICIAL(W)INTELLIGENCE

-- d. SS S7 AND EXPERT/TI

13. Suppose you want references on the Viking mission to Mars. You've begun with the search statement leading to Set 4:

```
SS VIKING/TI AND MISSION AND MARS
          1    254 VIKING/TI
          2   2145 MISSION
          3   1558 MARS
          4     39 1 AND 2 AND 3
```

Which of the following would broaden and which would narrow the search? For each statement, circle B for BROADEN of N for NARROW.

B N a.
```
SS VIKING AND MARS
          5    532 VIKING
          6   1558 MARS
          7    468 5 AND 6
SS S4 OR S7
```

B N b.
```
SS VIKING/TI AND MISSION/TI AND MARS
          9    254 VIKING/TI
         10    328 MISSION/TI
         11   1558 MARS
         12     17 9 AND 10 AND 11
SS S4 AND S12
```

B N c.
```
SS VIKING AND MARS/TI
         16    532 VIKING
         17    697 MARS/TI
         18    239 16 AND 17
SS S4 OR S18
```

B N d.
```
SS S4 AND MISSION/TI
```

B N e.
```
SS MARS/TI AND MISSION/TI
         22    697 MARS/TI
         23    328 MISSION/TI
         24     11 22 AND 23
SS S4 AND S24
```

14. Which of the following is the LEAST appropriate use of the NOT operator? (select one)

-- a. You want articles on achromatic (i.e., without color) pattern recognition and your search statement is:

SS PATTERN(W)RECOGNITION NOT COLOR

-- b. You want a list of references from Set 6 that excludes the references in Set 4, since Set 4 has already been printed out. Your search is:

SS S6 NOT S4

-- c. You want the references in Set 6 that were not written by J.F. Gibbons, because you are confident that you are already familiar with Gibbons' work. Your search statement is:

SS S6 NOT AU=GIBBONS, J.F.

name_____

date_____

ONLINE SEARCHING EXAM (1)

Please answer the questions in the order given. It should take you 30 minutes to complete the exam.

1. What selection from the menu do you choose if you want to get into the DIALOG system? (choose one)

   -- a. Enter the Universal Online searcher.

   -- b. Enter the Personal Data Manager.

   -- c. Receive instructions on the use of Sci-Mate.

   -- d. Leave the Sci-Mate system.

2. Suppose that instead of typing SEMICONDUCTOR you've typed SEMICODNUCTOR and you recognize it before pressing the ENTER key. What key should you use to correct your error? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE

3. What key do you press to begin the LOGOFF process? (select one)

   -- a. F key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE key

4. Of the following topics, which is most appropriate for searching in INSPEC? (select one)

   -- a. The melting point of aluminum.

   -- b. Computer-aided design of large scale integrated circuits?

   -- c. Electronics and computers.

   -- d. Physical properties.

5. Identify the main concepts of the following search topic:

   STUDY OF FLIGHT CONTROL SYSTEMS FOR POWERED-LIFT AIRCRAFT AND ROTORCRAFT

   Concepts: _____

   _____

   _____

   _____

6. What are the main concepts of the following literature search topic? (select one)

   OXIDATION OF CdTe AT CONTACTS

   __a. Cd
   Te

   __b. Oxidation
   CdTe
   Contacts

   __c. Oxidation
   Cd
   Contacts

   __d. Cd
   Contacts

7. List at least two synonyms or variations for each main concept for the following topic:

COMPUTER-AIDED DESIGN OF MICROCOMPUTERS

computer-aided design	microcomputers
_____	_____
_____	_____
_____	_____

8. Answer each of the following TRUE/FALSE questions by circling the T or F.

T F a. The OR operator results in a larger output of references than the AND operator.

T F b. Terms that are connected in a search statement by OR have to occur in the same retrieved reference.

T F c. The OR operator is used to limit a search.

T F d. Terms that are connected in a search statement by AND have to occur in the same retrieved reference.

T F e. Combining terms by AND decreases the specificity of the search.

10. While commands are listed at the top of the screen, which symbol do you enter to indicate that you need assistance with one or more of those commands?

-- a. !

-- b. @

-- c. ?

-- d. $

11. The system provides which of the following in response to the commands SEARCH and retrieve, and SUBMIT the query? (select all that apply)

-- a. A collection of references

-- b. A count of the number of references for the search statement

-- c. A set number for the final result

-- d. A list of synonyms for each term

12. Respond to the following menus to combine previously formed SET 1 OR SET 2. (Note that answer lines are marked with an asterisk (*).)

What do you want to SEARCH?
1. Set number
2. Subject Term or Phrase
3. Author
4. Specific Field
*Select a Letter or Number: ___

*Enter Set Number: ___

Do you want to:
1. Submit query.
2. Refine Query with AND Logic.
3. Extend Query with OR Logic.
4. Limit Query with NOT Logic.
*Select a Number: ___

What do you want to SEARCH?
1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field
*Select a Number: ___

*Enter Set Number: ___

Do you want to:
1. Submit Query
2. Continue with OR Logic
*Select a number: ___

13. Which of the following are correct abbreviations for SEARCH and retrieve? (select all that apply)

-- a. S RETRIEVE

-- b. S

-- c. S R

-- d. SEARCH R

14. Which is the proper command to show references on the screen? (select one)

-- a. L

-- b D

-- c. K

-- d. S

15. What format would you ordinarily use to inspect a search result online to assess the appropriateness of the result?

-- a. Titles only

-- b. Titles and abstracts

-- c. Author, title, journal

-- d. Full reference

16. When a list of references is displayed, the first reference will be: (select one)

-- a. Older than the 10th reference

-- b. More recently added to INSPEC than the 10th reference

-- c. Longer than the 10th reference

-- d. More relevant than the 10th reference.

17. The function of the LIST command is to:
(select one)

-- a. Allow a searcher to review his/her strategy

-- b. List the references retrieved in a given set

-- c. Define your own display format

-- d. Erase previous sets

18. Which of the following are correct abbreviations for LIST (select all that apply)

-- a. L SETS

-- b. L

-- c. L S

-- d. LIST S

19. The query LARGE SCALE requires that:
(select one)

-- a. The words LARGE and SCALE must appear somewhere in a given reference, but not necessarily in the same field.

-- b. Both the words LARGE and SCALE must appear in the title.

-- c. The word LARGE must precede the word SCALE in the reference.

-- d. The words LARGE and SCALE must appear next to each other in the reference, but in either order.

20. Respond to the following menus in order to retrieve all references in which the phrase EXPERT SYSTEM appears in either the title, abstract, identifier, or descriptor fields. (Note the asterisk (*) marking the answer lines.)

```
 What do you want to SEARCH?

 1.  Set Number
 2.  Subject Term or Phrase
 3.  Author
 4.  Specific Field
*Select a Letter or Number: ___

*Enter Subject Term or Phrase:  ___
```

```
 Do you want to:
 1.  Submit Query
 2.  Refine Query with AND Logic
 3.  Extend Query with OR Logic
 4.  Limit Query with NOT Logic
 5.  Specify Proximity to Another Term
*Select a Number:  ___
```

21. Compare the search statement BIG BANG with another search statement in which you have used AND to combine the two separate queries BIG and BANG. (select all that are true)

-- a. BIG BANG will retrieve fewer references.

-- b. A greater concentration of the references retrieved by BIG BANG will be relevant to the "big bang theory", compared to the references retrieved by BIG AND BANG.

-- c. BIG NOT BANG would be a better search for "big bang theory" than either of them.

-- d. Both statements will search only the Basic Index.

22. Which search term is likely to retrieve the greatest number of references? (select one)

-- a. ROBOT

-- b. ROBOTICS

-- c. ROBOT?

-- d. ROBOTS OR ROBOT

23. Which word would NOT be matched by the search statement "COLOR?" ? (select one)

-- a. COLORS

-- b. COLOR

-- c. COLORATION

-- d. COLOUR

24. Which statement is likely to retrieve the most references NOT RELEVANT to the topic of "fiber optics"? (select one)

-- a. the query FIBRE? ANDed with the query OPTIC?

-- b. the query FIBER? ANDed with the query OPTIC?

-- c. the query FIBRE? ANDed with the query OPTICS

-- d. the query FIB? ANDed with the query OPTIC?

25. What parts of a reference are included in the DIALOG Basic Index? (select all that apply)

-- a. author

-- b. title

-- c. abstract terms

-- d. journal title keywords

-- e. descriptors

26. Respond to the following menus to initiate a search for LASER in the entire Basic Index.

What do you want to SEARCH?

1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field

*Select a Letter or Number: ___

*Enter Subject Term or Phrase: _____

Do you want to:

1. Submit Query
2. Refine Query with AND Logic
3. Extend Query with OR Logic
4. Limit Query with NOT Logic
5. Specify Proximity to Another Term

*Select a Number: ___

27. Which fields contain terms assigned by professional indexers, rather than by the authors of the journals covered in INSPEC? (select all that apply)

-- a. descriptor field

-- b. index field

-- c. title field

-- d. thesaurus field

28. Respond to the following menus to retrieve references in which CADMIUM is a primary topic.

What do you want to SEARCH?

1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field

*Select a Letter or Number: ___

*Enter Field Tag (2 char): ___

*1. = or 2. / Enter 1 or 2: ___

*Enter Term: _____

name_____

date_____

ONLINE SEARCHING EXAM (2)

Please answer the questions in the order given. It should take you 30 minutes to complete the exam.

1. What is the correct series of selections to list the number of references for authors whose last names begin with the letters "Self"? (Note that asterisks (*) mark the answer lines.)

   Do you want to BROWSE:

   1. Subject Term
   2. Author
   3. Specific Fields

   *Select a Letter or Number: ___

   *Enter Field Tag (2 char): ___

   *1. au= or 2. /au? Enter 1 or 2: ___

   *Enter Term: _____

2. The BROWSE command allows a searcher to: (select one)

   -- a. Look through an index for words that begin with a specified string of letters

   -- b. Increase the comprehensiveness of a search

   -- c. Display a result in a longer format

   -- d. Identify synonyms for a term

3. The BROWSE command is useful in searching for articles by a particular author because: (select all that apply)

   -- a. The entries for a given author may vary slightly

   -- b. The BROWSE command displays the years during which a given author was writing

   -- c. The BROWSE command improves computer response time

   -- d. The BROWSE command identifies when an author has changed his or her name.

4. Suppose you BROWSE on the author Self and the system presents the following:

```
TERM#     HITS          TERM
++++++++++++++++++++++++++++
  1          1          AU=SELF, R.
  2         36          AU=SELF, S.
  3                    *AU=SELF
  4          3          AU=SELF, S.A.
  5          2          AU=SELF, W.B.

1.  Group terms in one set
2.  Select terms for separate sets
3.  Page Forward
4.  Page Back
5.  End Current BROWSE
Select a Number:
```

What command would be the most efficient and effective way to retrieve papers by Sarah Anson Self? (select one)

__a. GROUP TERMS 1-4

__b. GROUP TERMS 1 or 2

__c. SEARCH SELF, SARAH/AU

__d. GROUP TERMS 4

5. What command should you issue to see a continuation of the BROWSE display? (select one)

   -- a. PAGE FORWARD

   -- b. PAGE BACK

   -- c. MORE

   -- d. EXTEND

7. Respond to the following menus to retrieve references by J. Linville in INSPEC. (Note asterisks (*) at answer lines.

```
What do you want to SEARCH?
1.  Set Number
2.  Subject Term or Phrase
3.  Author
4.  Specific Field
*Select a Number:  ___

*Enter Field Tag (2 char):  ___

*1.  au=    or    2. /au?     Enter 1 or 2:  ___

*Enter Term:  __________
```

```
Do You Want to:
1.  Submit Query
2.  Refine Query with AND Logic
3.  Extend Query with OR Logic
4.  Limit Query with NOT Logic
5.  Specify Proximity to Another Term
*Select a Number:  ___
```

8. Respond to the following menus to retrieve references to REVIEW ARTICLES on VLSI. (Note asterisks (*) marking answer lines.)

What do you want to SEARCH?
1. Set Number
2. Subject Term
3. Author
4. Specific Field
*Select a Letter or Number: ___

*Enter Subject Term or Phrase: _____
_____

Do you want to:
1. Submit the Query
2. Refine Query with AND Logic
3. Extend Query with OR Logic
4. Limit Query with NOT Logic
5. Specify Proximity to Another Term
*Select a Number: ___
_____

What do you want to SEARCH?
1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field
*Select a Letter or Number: ___

*Enter Field Tag (2 char): ___

*1. tc= or 2. /tc Enter 1 or 2: ___

*Enter Term: _____
_____

Do You Want to:
1. Submit the Query
2. Refine Query with AND Logic
3. Extend Query with OR Logic
4. Limit Query with NOT Logic
5. Specify Proximity to Another Term
*Select a Number: ___

9. Select the correct series of commands to identify the most articles by Richard G. Harboe-Sorenson. (Note asterisks (*) marking answer lines.)

Do you want to BROWSE:
1. Subject Term
2. Author
3. Specific Fields
*Select a Letter or Number: ___

*Enter Field Tag (2 char): ___

*1. au= or 2. /au? Enter 1 or 2: ___

Enter Term: _____

10. Suppose you want references on expert systems for medical diagnosis. Your original search looks like this:

Query: expert AND system?

SET 1: 1245 HITS

Query: med? OR diag?

SET 2: 108817 HITS

Query: 1 AND 2

SET 3: 281 HITS

Which of the following would NOT narrow set 3 to a more revelant set of references? (select the two that apply)

__ a. Query: 3 AND EXPERT SYSTEM

Query: MEDIC?/TI OR DIAGNOS?/TI

SET 4: 9729 HITS

__ b. Query: 3 AND 4

__ c. Query: 3 OR ARTIFICIAL INTELLIGENCE

__ d. Query: 3 AND EXPERT/TI

11. Suppose you want references on the Viking mission to Mars. You've begun with the search statement leading to Set 9:

    Query: VIKING/TI AND MISSION AND MARS

    SET 9: 39 HITS

Which of the following would broaden and which would narrow the search? For each statement, circle B for BROADEN of N for NARROW.

B N a. QUERY: VIKING AND MARS

SET 10: 468 HITS

SET 9 OR SET 10

B N b. QUERY: VIKING/TI AND MISSION/TI AND MARS

SET 11: 17 HITS

SET 9 AND SET 11

B N c. QUERY: VIKING AND MARS/TI

SET 12: 239 HITS

SET 9 OR SET 12

B N d. QUERY: 9 AND MISSION/TI

B N e. QUERY: MARS/TI AND MISSION/TI

SET 13: 11 HITS

SET 9 AND SET 13

12. Which of the following is the LEAST appropriate use of the NOT operator? (select one)

-- a. You want articles on achromatic (i.e., without color) pattern recognition and your search statement is:
PATTERN RECOGNITION NOT COLOR

-- b. You want a list of references from Set 6 that excludes the references in Set 4, since Set 4 has already been printed out. Your search is:
Set 6 NOT Set 4

-- c. You want the references in Set 6 that were not written by J.F. Gibbons, because you are confident that you are already familiar with Gibbons' work. Your search statement is:
Set 6 NOT AU=GIBBONS, J.F.

14. Which one of the following CANNOT be searched in INSPEC? (select all that apply)

-- a. author's name

-- b. author's reprint address

-- c. words in title or abstract articles

-- d. words in results section of articles

-- e. descriptors and identifiers assigned by professional indexers

15. Which of the following is the correct search statement to find references that mention the chemical formula for water?

__ a. GAAS

__ b. H(W)SUB(W)2(W)O

__ c. H(W)2(W)O

__ d. SUP(W)H(W)2(W)O

16. T F a. The NOT operator increases the amount of retrieval.

T F b. The NOT operator may eliminate relevant references.

17. Which of the following fields might be useful for searching by OTHER THAN subject? (select all that apply)

__ a. descriptor field (/DE)

__ b. author field (AU=)

__ c. abstract field (/AB)

__ d. author's affiliation field (CS=)

APPENDIX 8

name_____

date_____

ONLINE SEARCHING EXAM (3)

Please answer the questions in the order given.

1. What selection from the menu do you choose if you want to get into the DIALOG system? (choose one)

   -- a. Enter the Universal Online searcher.

   -- b. Enter the Personal Data Manager.

   -- c. Receive instructions on the use of Sci-Mate.

   -- d. Leave the Sci-Mate system.

2. Suppose that instead of typing SEMICONDUCTOR you've typed SEMICODNUCTOR and you recognize it before pressing the ENTER key. What key should you use to correct your error? (select one)

   -- a. ESCAPE key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE

3. What key do you press to begin the LOGOFF process? (select one)

   -- a. F key

   -- b. CONTROL-BREAK keys

   -- c. ALT key

   -- d. BACKSPACE key

4. Answer each of the following TRUE/FALSE questions by circling the T or F.

T F a. The OR operator results in a larger output of references than the AND operator.

T F b. Terms that are connected in a search statement by OR have to occur in the same retrieved reference.

T F c. The OR operator is used to limit a search.

T F d. Terms that are connected in a search statement by AND have to occur in the same retrieved reference.

T F e. Combining terms by AND decreases the specificity of the search.

T F f. The NOT operator increases the amount of retrieval.

T F g. The NOT operator may eliminate relevant references.

5. Respond to the following menus to combine previously formed set 1 OR set 2. (Note asterisks (*) marking answer lines.)

What do you want to SEARCH?
1. Set number
2. Subject Term or Phrase
3. Author
4. Specific Field
*Select a Letter or Number: ___

*Enter Set Number: ___

Do you want to:
1. Submit query.
2. Refine Query with AND Logic.
3. Extend Query with OR Logic.
4. Limit Query with NOT Logic.
*Select a Number: ___

What do you want to SEARCH?
1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field
*Select a Number: ___

*Enter Set Number: ___

Do you want to:
1. Submit Query
2. Continue with AND Logic
*Select a number: ___

6. Which is the proper command to show references on the screen? (select one)

-- a. L

-- b D

-- c. K

-- d. S

7. When a list of references is displayed, the first reference will be: (select one)

-- a. Older than the 10th reference

-- b. More recently added to INSPEC than the 10th reference

-- c. Longer than the 10th reference

-- d. More relevant than the 10th reference.

8. The function of the LIST command is to: (select one)

__a. Allow a searcher to review his/her strategy.

__b. Display the references retrieved in a given set.

__c. Define your own display format.

__d. Erase previous sets.

10. The query LARGE SCALE requires that: (select one)

-- a. The words LARGE and SCALE must appear somewhere in a given reference, but not necessarily in the same field.

-- b. Both the words LARGE and SCALE must appear in the title.

-- c. The word LARGE must precede the word SCALE in the reference.

-- d. The words LARGE and SCALE must appear next to each other in the reference, but in either order.

9. Suppose you BROWSE on the author Self and the system presents the following:

TERM#	HITS	TERM
1	20	AU=SELF, R.
2	1	AU=SELF, S.
3		*AU=SELF
4	3	AU=SELF, S.A.
5	2	AU=SELF, W.B.

1. Group terms in one set
2. Select terms for separate sets
3. Page Forward
4. Page Back
5. End Current BROWSE

What command would be the most efficient and effective way to retrieve papers by Sarah Anson Self? (select one)

__a. GROUP TERMS 1-5

__b. GROUP TERMS 1 OR 5

__c. SEARCH SELF, SARAH/AU

__d. GROUP TERMS 4

11. Select the correct sequence of commands for retrieving references by J. Linville in INSPEC. (Note asterisks (*) marking answer lines.)

What do you want to SEARCH?
1. Set Number
2. Subject Term or Phrase
3. Author
4. Specific Field

*Select a Number: ___

*Enter Field Tag (2 char): ___

*1. au= or 2. /au? Enter 1 or 2: ___

*Enter Term: _____

Do You Want to:
1. Submit Query
2. Refine Query with AND Logic
3. Extend Query with OR Logic
4. Limit Query with NOT Logic
5. Specify Proximity to Another Term

*Select a Number: ___

12. Suppose you want references on expert systems for medical diagnosis. Your original search looks like this:

Query: expert AND system?

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Query: med? OR diag?

SET 2: 108817 HITS

Query: 1 AND 2

SET 3: 281 HITS

Which of the following would NOT narrow set 3 to a more revelant set of references? (select the two that apply)

__ a. Query: 3 AND EXPERT SYSTEM

Query: MEDIC?/TI OR DIAGNOS?/TI

SET 4: 9729 HITS

__ b. Query: 3 AND 4

__ c. Query: 3 OR ARTIFICIAL INTELLIGENCE

__ d. Query: 3 AND EXPERT/TI

13. Suppose you want references on the Viking mission to Mars. You've begun with the search statement leading to Set 9:

Query: VIKING/TI AND MISSION AND MARS

SET 9: 39 HITS

Which of the following would broaden and which would narrow the search? For each statement, circle B for BROADEN of N for NARROW.

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SET 10: 468 HITS

SET 9 OR SET 10

B N b. QUERY: VIKING/TI AND MISSION/TI AND MARS

SET 11: 17 HITS

SET 9 AND SET 11

B N c. QUERY: VIKING AND MARS/TI

SET 12: 239 HITS

SET 9 OR SET 12

B N d. QUERY: 9 AND MISSION/TI

B N e. QUERY: MARS/TI AND MISSION/TI

SET 13: 11 HITS

SET 9 AND SET 13

14. Which of the following is the LEAST appropriate use of the NOT operator? (select one)

-- a. You want articles on achromatic (i.e., without color) pattern recognition and your search statement is:
PATTERN RECOGNITION NOT COLOR

-- b. You want a list of references from Set 6 that excludes the references in Set 4, since Set 4 has already been printed out. Your search is:
Set 6 NOT Set 4

-- c. You want the references in Set 6 that were not written by J.F. Gibbons, because you are confident that you are already familiar with Gibbons' work. Your search statement is:
Set 6 NOT AU=GIBBONS, J.F.

END-USER SEARCHING WORKBOOK

Session 1

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PART 1: GETTING FAMILIAR WITH THE SYSTEM

1.1 LOCATION AND FUNCTION OF KEYS

Note the location and function of the keys listed below.

KEY	FUNCTION
BACKSPACE key ( )	If you make a typing mistake, backspace to correct it.
BREAK key ( )	If response is too slow, press to get a prompt.
ENTER key ( )	Press at the end of every command.
ESCAPE key (ESC)	Press to return to Sci-Mate.
SHIFT key ( )	Press to type alternate characters.

CONTROL key (CTRL)

CTRL-P starts and ends the printing.
To use the printer, press the CONTROL key, and while holding it down, press the letter P key.

CTRL-C stops the display of references.
CTRL-C cancels a search command, if you have already pressed the ENTER key.

CTRL-S stops the screen scroll.
CTRL-Q starts the scroll again.

Upper case letter "O" and the number zero (0) are two different characters. So are lower case "l" and the number one (1).

Each direction you are to type is preceded by an asterisk (*). You can type in upper or lower case letters. Typing directions will look like this:

* Type: EXPERT(W)SYSTEM?

Turn on the computer (red switch, back right corner).

Turn on the modem (back right).

Turn on the printer (switch on side).

When asked for the date, hit the ENTER key.

When asked for the time, hit the ENTER key.

When asked to select a choice, * Type: SCIMATE

At the Sci-Mate Welcome menu, * Type: 1
(If at any time you make the wrong choice, press the ESC key to return to the previous screen.)

When asked for the date, follow the screen instructions.

At the On-line Menu, * Type: 2

At the Selected Host Systems screen, * Type: 1

At the Data Base Selection, * Type: 13
(This is the number for the more recent half of INSPEC, from 1977 to the present.)

Wait while you are being connected to Dialog.

At the Online Search screen, * Type: 2
(Note the $$ in the upper right hand corner of the screen. You are now logged on and the account is being charged.)

At the Native Search Mode screen, wait for the ? to appear. You are now ready to begin searching.

1.4 LOGGING OFF

Press the ESC key.

At the Online Search screen, * Type: 3

At the Online Menu, * Type: 3

You are disconnected from DIALOG. Notice that the $$ has disappeared from the upper right hand corner. Charges are no longer accruing.

To return to the Sci-Mate Welcome screen, use the ENTER key.

At the Welcome screen, * Type: 5

Turn off the terminal, modem, and printer.

1.3 SAMPLE SEARCH

Follow the procedures listed below. The commands will be explained in the next section.

The next commands will tell the computer to search the database and retrieve references containing the search terms you specify.

* Type: SS EXPERT(W)SYSTEM? OR KNOWLEDGE(W)BASED(W)SYSTEM? (Be sure to include the question marks. Their function will be explained later.)

The computer responded by collecting references into a set, assigning the set a number, and reporting the number of references found. Note that OR means EITHER references which refer to expert systems OR references which refer to knowledge based systems OR both. References which contain both terms are counted only once.

Each time, wait for the computer's response and the ? prompt.

* Type: SS MEDICINE OR MEDICAL

With the next step you will combine the EXPERT SYSTEM/KNOWLEDGE BASED SYSTEM set with the MEDICINE/MEDICAL set. S3 and S6 below stand for set numbers. Your set numbers may be different. Be sure to use the numbers that refer to your own search.
own search.

* Type: SS S3 AND S6

The next command will display references on the screen.

Be ready to:
Stop the screen scroll with CTRL-S.
Start the screen scroll with CTRL-Q.

* Type: T 7/5/1-2

Use CTRL-P to turn on the printer. Do NOT press the ENTER key.

To see the sets that you have created,
* Type: DS

After the printer has DISPLAYed your SETs,
use CTRL-P to turn off the printer.

To clear this search from the computer's work space:

* Type: B13

Part 2: BASIC STEPS OF ONLINE SEARCHING

use of the commands SS (SELECT STEPS) and T (TYPE), and the connectors AND and OR.

The preceding example was typical, though simplified.

The following example lists the basic steps in formulating and executing a search. It explains what you have done.

PREPARE before you log on to DIALOG.

This will make your online searching more effective, and will also save you money.

Basic steps:

2.1 WRITE YOUR SEARCH TOPIC SUCCINCTLY.

2.2 PICK OUT THE 2 OR 3 MAIN IDEAS OR CONCEPTS. Express each in a single word or short phrase (2 or 3 words).

2.3 LIST SYNONYMS FOR EACH MAIN IDEA.

2.4 JOIN EACH GROUP OF SYNONYMS WITH OR AND EXPRESS THE GROUP AS AN SS COMMAND.

2.5 JOIN THE MAIN CONCEPT SETS NUMBERS WITH AND. EXPRESS THIS AS AN SS COMMAND.

Example:

Step 1. Write down the search topic.

Suppose you want to locate references on the topic of using expert systems in medical diagnosis and treatment.

Write down your topic this way. Search Topic:
Use of expert systems in medical diagnosis and treatment.

Step 2. Identify main concepts.

Pick out 2 or 3 concepts: expert systems
medicine

Step 3. List synonyms for each main concept:

expert systems	medicine
knowledge based systems	medical

Step 4. Join each group of synonyms with OR:

expert systems OR knowledge based systems
medicine OR medical

Express each group as an SS command:

SS EXPERT(W)SYSTEM? OR KNOWLEDGE(W)BASED(W)SYSTEM?
SS MEDICINE OR MEDICAL

"(W)" must be inserted between the words in a phrase when you want references that mention that phrase in the exact word order.

The ? on SYSTEM? gets you all words that begin with "system", including "systems", "systematic", etc. This is called truncation.

Step 5. Join the main concept set numbers with AND.

Express them as an SS command:

SS S3 AND S6

2.6 ONLINE ASSISTANCE

Log on.

For general information about DIALOG commands:

* Type: HELP

JORKSHEET #1. To practice the basic steps of searching.

Step 1. Write down the search topic.

Suppose you want to locate references on the topic of splicing optical fibers in fiber optics technology. Write your topic this way:

Search topic: splicing of optic fibers

Step 2. Identify main concepts.

CONCEPT A	CONCEPT B	CONCEPT C
SPLICING	OPTIC	FIBERS

Step 3. List synonyms for each main concept.

SPLICE	OPTIC	FIBER
SPLICED	OPTICS	FIBERS
SPLICING	OPTICAL	FIBRE
JOIN		FIBRES
JOINED		CABLE
JOINING		
JOINTING		

Note the use of both American and British spellings (fiber, fibre). Both variants are frequently found in INSPEC.

Step 4. Join each group of synonyms with OR. Use the ? to avoid typing all the variants of each word.

splic? OR join?
optic?
fiber? OR fibre? OR cable?

Express each set as an SS command.

* Type: SS SPLIC? OR JOIN?
* Type: SS OPTIC?
* Type: SS FIBER? OR FIBRE? OR CABLE?

Step 5. Join the main concept set numbers with AND.

Express this as an SS command.

* Type: SS S3 AND S4 AND S8

Step 6. Display the first two references of the final result.

* Type: T /5/1-2

(Replace the box with the number of your final set.)

* Type: SS SPLICING OF OPTICAL FIBERS

The zero response to an "SS" expression indicates that DIALOG could not find the words you used after the "SS". Review zero responses with the following in mind:

> Are the terms after "SS" spelled correctly?

> Did you connect phrase words with (W)?

> Did you join main concepts with AND?

> Did you leave a space after the "SS"?

> Did you use one of the words that are deliberately omitted from all DIALOG databases? These are call "stop words", and are excluded because they have little meaning in themselves. They are:

a	by	on	at	of
an	from	to	for	the
as	new	and	in	with

(Note that using "AND" as a connector is not the same as using it as a search term.)

Check that the printer is turned on.
Use CTRL-P to begin printing. Do NOT press the ENTER key.
To DISPLAY the sets you have created:

* Type: DS

After the printer has DISPLAYed your sets, use CTRL-P to end the printing.

To clear the computer's workspace:

* Type: B13

name_____

2.8 Pick a simple search topic of your own choice.

1. Write it on the dashed line below.

---

2. Divide your topic into 2 or 3 main concepts.

   Write them here.

   ---------- ---------- ----------

3. List synonyms and related terms under each concept.
   Write them here.

   ---------- ---------- ----------

   ---------- ---------- ----------

   ---------- ---------- ----------

   ---------- ---------- ----------

* 4. Using the SS command and the OR connector, construct a set for each of your main concepts.

* 5. Using the SS command and the AND connector, construct a set of the main concept set numbers.

6. Look at the first 5 references in the final set.

   * Type: T /5/1-5

PART 3: FORMATS AND THE TYPE COMMAND

3.1 FORM OF DISPLAY FORMAT

When you display references in a given set by using the TYPE command the form is as follows:

```
Set #      format #      references numbers

           2/5/1-2
```

The first number is the set number for the references you want to display.

The last number, or range of numbers, tells which references you want to see.

Note that the most recently added references are shown first.

The middle number ("5" in this example) specifies how much information will be displayed about the references. This is called the "format" of the TYPE command. There are 9 possible formats.

3.2 THE MOST IMPORTANT FORMATS

Format	Amount of information displayed
3	Basic reference, including authors, title, source (i.e., journal, date, pages, etc.)
5	Full references, including authors, title, source (i.e. journal, date, pages, etc.), descriptors, identifiers, abstract.
6	Titles only. Useful for inspecting contents of a set to see if it has what you expect.
8	Titles, identifiers, and descriptors only. This will help you modify a search by showing you the subject headings (descriptors and identifiers) assigned by Inspec indexers. More on this later.

This information on formats is also printed in the Quick Reference Guide.

* Using CTRL-P and DS, print a list of your sets.

Clear your workspace:

* Type: B13

Enter the command:

* Type: SS VLSI AND FABRICATION

Display the first reference in the final set, using format 5:

* Type: T /5/1

Display the 6th through 10th references, using format 5:

* Type: T /5/6-10

Display the first 5 references in the final set, using format 3:

* Type: T /3/1-5

Using format 6, display the first 8 references:

* Type: T /6/1-8

Using format 8, display references 2, 4, and 6 through 8:

* Type: T /8/2,4,6-8

WORKSHEET #2. Practice using the TYPE Command
(If you do not remember the number of the set you want to display, use the DS command so you can review the set numbers.)

EX 2.1. Look at the 3rd reference in the FABRICATION set. Use the full reference format.

EX 2.2. Look at the first 5 references in the VLSI set. Use the format that includes the source of the reference, but omits the abstract, identifiers, and descriptors.

EX 2.3. Look at the first 15 references in the VLSI AND FABRICATION set. Use the format that displays just the titles.

EX 2.4. Look at the 3rd, 5th, and 7th-10th references in the VSLI AND FABRICATION set, using the format that includes just the titles, descriptors, and identifiers.

PART 4. SUBJECT AND NON-SUBJECT SEARCHING

4.1 INFORMATION INCLUDED IN AN INSPEC REFERENCE.

References in Inspec are organized into distinct parts, called fields. Each field is labeled with a 2-letter code. Here is a partial diagram of the most important SPECIFIC FIELDS.

To see a complete list online:

* Type: ?FIELD13

BASIC INDEX		
SUFFIX CODE	FIELD NAME	EXAMPLES
none	basic index	SS MICROPROCESSOR
/AB	abstract	SS HOME(W)COMPUTER/AB
/DE	descriptor	SS PERSONAL(W)COMPUTING/DE
/ID	identifier	SS CHOICE/ID
/TI	title	SS MICROPROCESSOR(W)SYSTEM?/TI

ADDITIONAL INDEXES		
PREFIX CODE	FIELD NAME	EXAMPLES
AU=	author	AU=RUNGE, H?
TC=	treatment code	TC=GENER?
CS=	corporate source	CS=STANFORD

4.2 SUFFIX CODES: SUBJECT-RELATED FIELDS IN AN INSPEC REFERENCE

You have been searching in the "Basic Index". It includes the title field (TI), the abstract field (AB), the descriptor field (DE), and the identifier field (ID). You can also search the individual fields, as explained below.

> Title and abstract fields (TI,AB).

These fields contain subject-related words supplied by the authors of the reference. They are the same words that appear in the actual journal article. To search for references with the word "optic" in the title, enter:

* Type: SS OPTIC/TI

* Type: T /6/1-5

For references with "optic" in the abstract, enter:

* Type: SS OPTIC/AB

* Type: T /5/1

> Descriptor and identifier fields (DE,ID).

These fields describe the primary focus of the article. They contain subject-related words supplied not by the authors of references, but by the Inspec database supplier.

DE words are taken from Inspec's list of standard subject headings. Articles on a given topic tend to have descriptors in common even when authors do not use the same words in titles or abstracts.

ID words are created as needed to supplement the standard list. ID words tend to be newer or specialized terms, although the same word may appear in both DE and ID fields.

* Type: SS OPTIC/DE

* Type: T /8/1-3

And for identifiers:

* Type: SS OPTIC/ID

* Type: T /8/1-3

4.3 USE of "DISPLAY SETS" (DS) COMMAND TO REVIEW SEARCH STRATEGY.

For an online explanation of the DISPLAY SETS (DS) command:

* Type: ?DS

A search of the Basic Index results in more references than a search of one of the separate fields comprising the Basic Index.

> First, search the Basic Index for references mentioning the word "optic":

* Type: SS OPTIC

> This search retrieves more references than the command "SS OPTIC/TI", which you entered earlier. To see a list of your previous sets and their number of references, enter the command for DISPLAY SETS:

* Type: DS

4.4 SEARCHING MULTIPLE SUBJECT-RELATED FIELDS.

You may search multiple fields in one "SS" command.

* Type: SS OPTIC/DE,ID

Verify that the Basic Index is equivalent to the four subject-related fields.

* Type: SS OPTIC/TI,AB,DE,ID

* Type: SS OPTIC

Note that the commands retrieved the same number of references.

WORKSHEET #3. Practice in searching subject-related fields.

EX 3.1. Find references with the word "laser" in either the TI or DE field. Display the first 5 references in Format 8.

EX 3.2. Compare the above results with that from searching the Basic Index for "laser" Use Format 6, and look at the first 10 references.

Using CTRL-P, DS, and CTRL-P, print a list of your sets.

Clear the computer's workspace.

Log out.

REVIEW

These are the topics you covered in session 1.

Logging on.

Logging off.

The search command SS:	SS OPTIC
Use of the (W):	SS EXPERT(W)SYSTEM
Truncation:	SS EXPERT(W)SYSTEM?

OR joins synonyms and extends the search.

AND joins concepts and refines the search.

To see references:	T 5/5/1-3
Online assistance:	HELP
To DISPLAY your sets:	DS
To print:	CTRL-P, DS, CTRL-P
To clear the workspace:	B13

Display formats.

Subject field searching:	/TI, /AB, /DE, /ID

SESSION 2

4.5 PREFIX CODES: NON-SUBJECT-RELATED FIELDS

Review the parts of an Inspec reference.

* Type: ?FIELD13

You have been using suffix fields (TI, AB, DE, ID). These are subject-related fields that comprise the Basic Index. You searched them by specifying them as suffixes to your search terms.

For example, "SS VLSI/TI,DE" gets you references in which "VLSI" is mentioned in either the TI or DE fields.

The other fields, called prefix fields, are not specifically subject-related, and the form of the "SS" command is different.

Log on.

For example, to search for an author named B.C. Cole:

* Type: SS AU=COLE, B.C.
(Note that there is no space between the initials.)

If you had entered simply "SS B.C. Cole", you would have been disappointed. Try it if you need convincing.

The most commonly searched prefix (non-subject-related) field is the field containing authors' names (AU=).

4.6 AUTHOR SEARCHING. ("AU= ")

> Form of name. In the Inspec database, the standard format for listing an author's name is surname, comma, space, initials with periods but no spaces. For example:

AU=COLE, B.C.

> EXPAND command.

For an online explanation of the EXPAND command:

* Type: ?EXPAND

The exact form of an author's name is unpredictable, since you do not know in advance whether a middle initial will be included. Therefore, before you begin the search, always use the EXPAND command to browse through the list of names to check on the exact form, or you may miss valid references where the author was listed in an unexpected form.

For example, suppose you want to see references by Donald Knuth, but you don't know how it is listed in Inspec. (Abbreviate EXPAND to E.)

* Type: E AU=Knuth

Note the E-numbers in the left column on the screen.

Collect references by Knuth by expressing the appropriate E-number in an "SS" command:

* Type: SS E
(e.g., SS E3. Use the E-number for Knuth, D.E.)

Sometimes you will need to continue an EXPAND onto the next screen. For example, collect references by A. Smith:

* Type: E AU=SMITH, A.

Suppose the EXPAND display did not get far enough into the alphabet to display the "Smith, A." you are looking for. When you see the "MORE?" prompt:

* Type: P

You can repeat this as many times as you need to see the next PAGE.

You can pick more than one E-number. For example:

* Type: SS E3, E5, E7-E9

The EXPAND command is available in any searchable field, whether it is a prefix field or a suffix field. For example, to EXPAND on the term "VLSI" in the title (the suffix field "TI"),

* Type: E VLSI/TI

4.7 TRUNCATION

Another way to get around the problem of not knowing the exact form of an author's name is to use the truncation feature.

It allows you to find all names beginning with a specified string of characters. For example:

* Type: SS AU=SMITH, ?

This will retrieve all references by an author named "Smith", regardless of his initials.

NOTE: Truncation is also available for suffix fields.

* Type: SS CIRCUIT?/TI

This will not only get you references in which "circuit" occurs in the TI field, but also "circuits", "circuitry", "circuitous". . . any word whose first 7 letters are "circuit...".

> More than one author. Suppose you seek references authored by collaborators named Williams and Brown.

* Type: SS AU=WILLIAMS, ? AND AU=BROWN, ?

The OR connector is also available, should you want references by either author, whether written individually or in collaboration.

* Type: SS AU=WILLIAMS, ? OR AU=BROWN, ?

WORKSHEET #4. Practice in searching for references by a particular author.

EX 4.1 Find references to papers by James F. Gibbons. Use the EXPAND command before you enter an "SS" command.

EX 4.2. Using truncation, find references by A. G. Smith or A. G. D. Smith.

EX 4.3. Using EXPAND, find references by A. G. D. Smith or A. G. Smith.

EX 4.4. Find articles co-authored by Wade and Wong (assume that you do not know their initials, and use truncation, along with the AND connector).

EX 4.5. Find articles co-authored by P. Clauws and J. Broeckx.

EX 4.6. Find articles by either P. Clauws or J. Broeckx.

Check that the printer is turned on.
Use CTRL-P to begin printing. Do NOT press the ENTER key.

To DISPLAY the sets you have created:

* Type: DS

After the printer has DISPLAYed your sets, use CTRL-P to end the printing.

Clear the computer's workspace.

PART 5: COMMAND SUMMARY

COMMAND	USE	EXAMPLE
SELECT STEPS SS	Locates references containing the specified search terms and sets them aside in a numbered set.	SS LUNAR SS SOLAR AND ENERGY SS S1 AND S2
TYPE T	Displays references from sets created using the SS command. Used with set/format/ range designation.	TYPE 1/5/1-3 T 5/5/2-6

CTRL-C	Cancels a search in progress, or a TYPE command.
CTRL-S	Stops the scrolling screen display so you can read the references displayed with the TYPE command.
CTRL-Q	Begins the scroll of references again, after you have stopped their display with CTRL-S.
CTRL-P	Starts and stops the printing.

DISPLAY SETS DS	Displays all sets created since start of search session. Used for recap of set numbers and search strategy.	DISPLAY SETS DS
EXPLAIN ?	Requests online explanation of command and file features. ?EXPLAIN gives list of valid EXPLAIN commands.	EXPLAIN DISPLAY ?DISPLAY ?FILE13
BEGIN 13 B13	Restarts your search in File 13 (INSPEC) and erases previously formed sets. Use when approaching system limit of 98 sets or 1,000,000 references.	BEGIN 13 B13
PAGE P	In response to the prompt MORE?, shows the next page of the file or reference.	
EXPAND E	Allows you to browse through a field.	E AU=KNUTH

(This command summary also appears in Part C of your Quick Reference Guide.)

PART 6. MODIFYING SEARCHES IN PROGRESS

After you have written down your topic succinctly, identified the main concepts, listed synonyms and related terms, entered the appropriate "SS" commands and TYPED a few sample references you may discover that you have not found exactly what you are looking for. You may have located too few references or too many.

6.1.1. Add synonyms.
Recall the example about splicing of optic fibers.

* Type: SS SPLICING AND OPTIC AND FIBERS

Compare the number of references in the resulting set with what you get after enriching the search with additional synonyms for each concept:

CONCEPT A	CONCEPT B	CONCEPT C
SPLICING	OPTIC	FIBERS
SPLICE	OPTICS	FIBER
SPLICED	OPTICAL	FIBRE
JOINING		FIBRES
JOINT		CABLE
JOINTS		CABLES
JOINTING		
LINK		
CONNECTION		
CONNECTIONS		

Use truncation to include all the synonyms above, enter each main concept and its synonyms with OR:

* Type: SS SPLIC? OR JOIN? OR LINK? OR CONNECT?

* Type: SS OPTIC?

* Type: SS FIBER? OR FIBRE? OR CABLE?

* Type: SS S AND S AND S

(use actual set #'s for concept A, B, C)

There is usually a trade-off between getting everything on a topic ("comprehensiveness") and getting a very focused set of highly relevant articles ("precision"). A very comprehensive search will usually contain some irrelevant articles. A very precise search will usually miss some relevant articles.

> Careful about truncation. You should be especially careful in using truncation with less that 4 characters. In the example above, we truncated after "fiber?". Had we truncated after a shorter string of characters (e.g., "fib?"), we would have ended up with more false hits (e.g. fib, fiberscope, fiblas, fibonnacci, fibonacci...).

> Help in thinking of synonyms. For a topic with which you are not very familiar, find a few highly relevant citations and inspect the DE, ID, and AB fields to get ideas for additional synonyms.

* Type: SS OPTIC/TI AND FIBER/TI AND SPLICING/TI

* Type: T /5/1-5 (use the appropriate set # for the final result)

Note from the DE field that "cable jointing" might be a useful additional synonym for "fiber splicing".

6.1.2. To make your search less specific, loosen the logic requirements.

Compare the following.

Too stringent approach: * Type:

SS EFFECTS AND GLARE AND VDT AND OCCUPATIONAL AND HEALTH

Looser approach (drop a concept):

* Type: SS VDT AND HEALTH

* Type: T /6/1-10

Another way to make your search less specific is to use the AND connector more sparingly, while joining some of the concepts with the OR connector.

* Type: SS VDT

* Type: SS GLARE OR OCCUPATIONAL OR HEALTH

* Type: SS S AND S

Effective use of the above approach requires that you use your intuition in deciding which concepts can be meaningfully OR'ed together to make sense for your search topic.

5.1.3. Choose another database. Inspec is but one of more than 100 databases available through DIALOG. It is geared for topics in physics, electronics or computers. The above search on VDT's and occupational health would probably get more references in the MEDLINE database (File 154 in DIALOG). You will receive a list of DIALOG databases as part of your reward for being a subject in our experiment.

6.2. TOO MANY REFERENCES

If you have too many references you will need to make your search more specific by adding a concept, searching in a specific field, or using the NOT connector.

6.2.1. Add a concept. A frequent cause of getting too many references is that your search topic is too general. Suppose for example that you want references on the topic of silicon.

```
* Type:      SS SILICON
```

Do you really want to wade through that many references? Upon reflection, you realize that your real interest is in diffusion of boron in silicon.

```
* Type:      SS DIFFUS? AND BORON AND SILICON

* Type:      T     /6/1-10
```

This is still a lot, but it is a more manageable result, with much greater precision (concentration of relevant references).

Using CTRL-P, DS, and CTRL-P, print a list of your sets.

Clear the computer's workspace.

6.2.2. Find references that focus on the main point of your topic.

When your search includes words from the Abstract (AB field) you may retrieve some irrelevant references because a term may be mentioned only in passing. By restricting your search to a shorter field where every word counts, you can often achieve greater precision.

To focus on the main point of your topic, search on the subject related fields, TI, DE, and/or ID, rather than in Basic Index.

6.2.2.1. THE TI FIELD

For example, which search yields a higher concentration of references relevant to the topic of diffusion of boron in silicon, a search in the Basic Index or a search in the title field?

First, search in the Basic Index.

* Type: SS DIFFUS? AND BORON AND SILICON

* Type: T /6/1-10

Now, search in the title field.

* Type: SS DIFFUS?/TI AND BORON/TI AND SILICON/TI

* Type: T /6/1-10

6.2.2.2. THE DE AND ID FIELDS

Inspect the ID and DE fields in highly relevant references to discover words or phrases that are actually used in Inspec.

> First, find some highly relevant references. A good way to start is by searching the TI field. Using the set of references you retrieved in the exercise above, display the TI, DE, and ID fields in format 8.

```
* Type:      T       /8/1-5
```

> Now, inspect the DE and ID fields for likely terms. Note the DESCRIPTOR "diffusion in solids" that appears in the first few references. This looks like a promising DESCRIPTOR. So, restrict your original (too comprehensive) set to those references that include "diffusion in solids" as a DESCRIPTOR.

```
* Type:     SS BORON AND SILICON AND DIFFUSION(2W)SOLIDS/DE

* Type:     T    /6/1-10
```

Note that "diffusion in solids" could not be entered as DIFFUSION(W)IN(W)SOLIDS/DE. "In" is one of the "stop words" that is omitted from DIALOG. Yet, when a stop word is taken out of a reference, a gap remains where the word once was. You must tell the computer to skip over the gap, by inserting the numeral "2" before the "W".

To complete your search, combine the set in which all these concepts occurred in the title with the set in which the phrase "diffusion in solids" occurred as a descriptor.

```
* Type:     SS S       AND S

* Type:     T       /6/1-10
```

Most of these references should be quite relevant.

6.2.3 Use the NOT connector to exclude unwanted references.

In principle it is possible to exclude references on a given topic by using the NOT connector. For example:

* Type: SS COMPUTER NOT ANALOG

This search eliminates references in which the words "analog" and "computer" appear. But if the intention was to retrieve references on digital computers rather than analog computers, use of NOT is probably unwise. References such as the following would be inadvertently excluded:

"The computer scientist--analog techniques for digital computers"

"Two-mode multiline laser stabilization using a Fabry-Perot filter under analog and digital computer control"

"Digital emulation of analog computer techniques for the solution of kinetic systems"

A more prudent use of the NOT connector is illustrated below.

Suppose you wish to find articles on VLSI by all Stanford authors except for J.D. Meindl (because you are already aware of everything Meindl has written on the subject).

```
* Type:      SS VLSI AND CS=STANFORD

* Type:      T      /3/1-10
```

Note that by searching the CS field--a prefix field--for "Stanford", you retrieve references in which Stanford is given as the reprint address.

Compare the above results with:

```
* Type:      SS VLSI AND CS=STANFORD NOT AU=MEINDL,?

* Type:      T      /3/1-10
```

The references by Meindl have dropped out.

6.2.5 Restrict your search to certain "Treatment Codes".

If you are interested in only certain aspects of a broad topic, you can sometimes make use of the Treatment Code prefix field (TC=).

For example, suppose you want references on the economic aspects of telecommunications:

```
* Type:      SS TELECOMMUNICATION?

* Type:      T    /6/1-10

* Type:      SS S    AND TC=ECONOMIC ASPECTS

*Type:       T    /6/1-10
```

See Section H of the Quick Reference Guide for a complete list of Inspec's Treatment Codes.

Use truncation to abbreviate the TC's. For example, suppose you want review articles on lasers.

```
* Type:      SS LASER? AND TC=GENERAL?

* Type:      T    /6/1-6
```

But be careful about abbreviations. For example:

```
* Type:      SS LASER? AND TC=REVIEW
```

name_____

WORKSHEET #5. Review questions on modifying searches in progress.

EX 5.1 List 3 approaches to increasing your retrieval when your original search yields too few references.

_____

_____

_____

EX 5.2 List 3 approaches to narrowing your retrieval when your original search yields too many references.

_____

_____

_____

EX 5.3 Find references to review articles on telecommunications. Display the first 10 references using the title-only format.

EX 5.4 Find theoretical articles on lasers. Display the third reference in the format that includes the abstract.

EX 5.5 Find articles on the topic of Titan (a moon of Saturn) written by Harvard researchers. Display the first 3 references in format 3.

Print a list of your sets and clear the computer's workspace.

PART 7. SPECIAL SYMBOLS

Special characters or symbols and Greek letters appearing in abstracts or titles are spelled out in natural language.

> Chemical elements or compounds may be represented by symbols or in spelled out forms. Be sure to use both forms in a search. For example:

* Type: SS GALLIUM(W)ARSENIDE OR GAAS

* Type: T /6/1-10

> Subscripts or superscripts are indicated by preceding the character or number with "sub" or "sup". For example, to find references in which carbon dioxide appears in the title,

* Type: SS CO(W)SUB(W)2/TI OR CARBON(W)DIOXIDE/TI

* Type: T /6/1-10

To find references in which the formula for carbon-13 appears in the title,

* Type: SS SUP(W)13(W)C/TI OR CARBON(W)13/TI

* Type: T /6/1-10

Note in the carbon dioxide and carbon-13 examples that you must search on both the chemical formula and the spelled out form to retrieve all the references.

* Print a list of the sets you have created.

* Clear the computer's workspace.

Log off.

APPENDIX 10

END-USER SEARCHING WORKBOOK

Session 1

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PART 1: GETTING FAMILIAR WITH THE SYSTEM

1.1 LOCATION AND FUNCTION OF KEYS

Note the location and function of the keys listed below.

KEY	FUNCTION
BACKSPACE key ( )	If you make a typing mistake, backspace to correct it.
ENTER key ( )	Press at the end of every command.
ESCAPE key (ESC)	Press to return to previous screen.
SHIFT key ( )	Press to type alternate characters.

CONTROL key (CTRL)

CTRL-P starts and ends the printing. To use the printer, press the CONTROL key, and while holding it down, press the letter P key.

CTRL-C stops the display of references.

CTRL-C cancels a search command, if you have already pressed the ENTER key.

Upper case letter "O" and the number zero (0) are two different characters. So are lower-case "l" and the number one (1).

Each direction you are to type is preceded by an asterisk (*). You can type in upper or lower case letters. Typing directions will look like this:

* Type: EXPERT SYSTEM?

1.2 LOGGING ON TO DIALOG

Turn on the terminal (red switch, back right corner).

Turn on the modem (back right).

Turn on the printer (switch on the side).

When asked for the date, hit the ENTER key.

When asked for the time, hit the ENTER key.

When asked to select a choice, * Type: SCIMATE

At the Sci-Mate Welcome menu, * Type: 1
(If at any time you make the wrong choice, press the ESC key to return to the previous screen.)

When asked for the date, follow the screen instructions.

At the On-line Menu, * Type: 2

At the Selected Host Systems screen, * Type: 1

At the Data Base Selection screen, * Type: 13
(This is the number for the more recent half of INSPEC, from 1977 to the present.)

Wait while you are being connected to Dialog.

At the Online Search screen, * Type: 1
(Note the $$ in the upper right hand corner of the screen. You are now logged on and the account is being charged.)

At the Sci-Mate Search Menu, * Type: 2
You are now ready to begin searching.

1.4 LOGGING OFF

At the Sci-mate Search Menu, * Type: 5

At the Online Search screen, * Type: 3

At the Online Menu, * Type: 3

You are disconnected from DIALOG. Notice that the $$ has disappeared from the upper right hand corner. Charges are no longer accruing.

To return to the Sci-Mate Welcome screen, * use the ENTER key.

At the Welcome screen, * Type: 5

Turn off the terminal, modem, and printer.

1.3 SAMPLE SEARCH

Follow the procedures listed below. The commands will be explained in the next section.

The next commands will tell the computer to search the database and retrieve references containing the search terms you specify.

At the next menu, to SEARCH a subject term or phrase,
* Type: 2

When prompted for the first subject term,
* Type: EXPERT SYSTEM?
(Be sure to include the question mark. Its function will be explained later.)

Note the 2 variations of the phrase "expert system?": EXPERT SYSTEM? and EXPERT(W)SYSTEM? Both variations require the two words of the phrase to appear in that exact order.

You will modify your search with the next commands. First you will extend the search using OR logic to search for either the first subject term OR a synonym OR both. Then you will refine the search using AND logic to combine the first set of synonyms with another search topic.

To extend the query with OR logic,
* Type: 3

To search a synonymous subject term or phrase,
* Type: 2

When prompted to give the alternate term,
* Type: KNOWLEDGE BASED SYSTEM?

At the next menu, to SUBMIT the query,
* Type: 1

Every time you submit a query you ask for a set of references. The computer responds by collecting references into a set, assigning the set a number, and reporting the number of references found. Note the number of the set you have created.

Note that OR means EITHER references which refer to expert systems OR references which refer to knowledge based systems OR both. Records which contain both terms are counted only once.

```
 To continue the SEARCH, choose S from the selection at the top
 of the screen.
* Type:      S

 To SEARCH on another subject term or phrase,
* Type:      2

 When prompted for the subject term,
* Type:      MEDICINE

 To extend the query with OR logic,
* Type:      3

 To search a synonymous subject term or phrase,
* Type:      2

  When prompted to give the alternate term,
 * Type:      MEDICAL

  At the next menu, to SUBMIT the query,
* Type:      1
```

With the next steps you will combine the EXPERT SYSTEM/KNOWLEDGE BASED SYSTEM set with the MEDICINE/MEDICAL set. To SEARCH,

* Type: S

At the next menu, to SEARCH on a set number,

* Type: 1

To enter the set number for the first set,

* Type: 1

At the next menu, to combine set 1 with set 2, "refine the query with AND logic".

* Type: 2

At the next menu, to SEARCH on a set number,

* Type: 1

To enter the set number of the second set,

* Type: 2

With the next command you will create set #3 which combines sets #1 and #2.

At the next menu, to SUBMIT the query,
* Type: 1

The next commands will DISPLAY references on the screen.
* Type: D

At the next screen, to change the PRINT FORMAT,
* Type: 2

When prompted for the new format number,
* Type: 5

* Press the ENTER key to begin the DISPLAY.

To enter the starting reference number,
* Type: 1

To enter the number of references to display at a time,
* Type: 1

After the first reference has been displayed, you will see the prompt, "DISPLAY More?" To DISPLAY the second reference:

* Press the ENTER key.

End the DISPLAY after the second reference has been DISPLAYed. In response to the "DISPLAY More?" prompt,

* Type: N

Check that the printer is turned on.

* Press CTRL-P to begin printing. Do NOT press the ENTER key.

To LIST (i.e., display on the screen) your sets,

* Type: L

After the printer has LISTed your sets, to end the printing,

* Press CTRL-P

To clear this search from the computer's work space:

* Type: K

You will be asked to confirm that you do want to erase the sets. For "yes":

* Type: Y

To continue,

* Press the ENTER key.

Part 2: BASIC STEPS OF ONLINE SEARCHING

Use of the commands S and L, and the connectors AND and OR.

The preceding example was typical, though simplified.

The following example lists the basic steps in formulating and executing a search. It explains what you have done.

PREPARE before you log on to DIALOG.

This will make your online searching more effective, and will also save you money.

Basic steps:

2.1 WRITE YOUR SEARCH TOPIC SUCCINCTLY.

2.2 PICK OUT THE 2 OR 3 MAIN IDEAS OR CONCEPTS. Express each in a single word or short phrase (2 or 3 words).

2.3 LIST SYNONYMS FOR A MAIN IDEA.

2.4 ENTER A MAIN CONCEPT. USING OR, JOIN ONE SYNONYM AT A

A TIME TO THE MAIN CONCEPT. SUBMIT THE QUERY.

REPEAT STEPS 2.3 AND 2.4 FOR EACH MAIN CONCEPT.

2.5 JOIN THE MAIN CONCEPT SET NUMBERS WITH AND.

SUBMIT THE QUERY.

Example:

Step 1. Write down the search topic.

Suppose you want to locate references on the topic of using expert systems in medical diagnosis and treatment.

Write down your topic this way:

Search topic: Use of expert systems in medical diagnosis and treatment.

Step 2. Identify main concepts.

Pick out 2 or 3 concepts: expert systems
medicine

Step 3. List synonyms for each main concept.

expert systems	medicine
knowledge based systems	medical

Step 4. Enter a search term by choosing "SEARCH and retrieve".

EXPERT SYSTEM?

Now extend your search using OR to combine the synonym KNOWLEDGE BASED SYSTEM with the main concept EXPERT SYSTEM.

Sci-Mate inserts (W) between the words in a phrase to retrieve references that mention that phrase in the exact word order.

The ? on SYSTEM? gets you all words that begin with "system", including "systems", "systematic", etc. This is called truncation.

Repeat step 4 for each main concept, e.g., MEDICINE.

Step 5. To join the main concept set numbers with AND, choose to "refine the query with AND logic" using set numbers. Submit the query.

2.6 ONLINE ASSISTANCE

Log on.

At the next screen, for general information about the options offered,

* Type: ?

WORKSHEET #1. To practice these basic steps.

Step 1. Write down the search topic.

Suppose you want to locate references on the topic of splicing optical fibers in fiber optics technology. Write your topic this way:

Search topic: splicing of optic fibers

Step 2. Identify main concepts.

CONCEPT A	CONCEPT B	CONCEPT C
SPLICING	OPTICAL	FIBERS

Step 3. List synonyms for each main concept.

SPLICE	OPTIC	FIBER
SPLICED	OPTICS	FIBERS
SPLICING	OPTICAL	FIBRE
JOIN		FIBRES
JOINED		CABLE
JOINING		CABLES
JOINTING		

Note the use of both American and British spellings (fiber and fibre). Both variants are frequently found in INSPEC.

STEP 4. Enter a search term by choosing "SEARCH and retrieve".

Use the ? to avoid typing all the variants of each word as in the examples below.

SPLIC? JOIN?

STEP 5. Using OR, join one synonym at a time to the main concept. SUBMIT each query.

Follow this sequence for each main concept, in turn.

E.g., for the first main concept, SPLICING, join SPLIC? to its synonym, JOIN? in the steps below.

At the next menu, to SEARCH a subject term or phrase,
* Type: 2

When prompted for the term or phrase,
* Type: SPLIC?

To extend the query with OR,
* Type: 3

To SEARCH on a subject term or phrase,
* Type: 2

When prompted for the term or phrase,
* Type: JOIN?

To submit the query,
* Type: 1
Note the number of the set you have just created.

To begin the next steps, to choose to SEARCH,
* Type: S

* STEP 6. REPEAT STEPS 4 AND 5 FOR EACH MAIN CONCEPT.

* Step 7.Then join the main concept set numbers with AND as shown in the steps below.

To return again to the SEARCH menu.
* Type: S

To SEARCH on a set number,
* Type: 1

When prompted to enter the number for the first set you want to combine,
* Type: 1

To refine the query with AND logic,
* Type: 2

To SEARCH on a set number,
* Type: 1

When prompted to enter the number for the second set you want to combine,
* Type: 2

To refine the query with AND logic,
* Type: 2

To SEARCH on a set number,
* Type: 1

When prompted for the number of the third set you want to combine,
* Type: 3

To submit the query,
* Type: 1

```
Step 8.  To DISPLAY the first two references of the final result,
* Type:      D

  To change the PRINT FORMAT,
* Type:      2

  When prompted for the new format number,
* Type:      5

  To begin the display,
* Press the ENTER key.

  To enter the starting reference number,
* Type:      1

  To enter the number of references to be displayed at a time,
* Type:      2

  To end the DISPLAY after seeing the second reference,
* Type:      N

  To return to the SEARCH screen,
* Type:      S
```

2.7 ERRORS

* Select the correct sequence of options to enter the following as one phrase: SPLICING OF OPTICAL FIBERS

The zero response indicates that DIALOG could not find the terms you used.

Review zero responses with the following in mind:

> Are the terms spelled correctly?

> Did you connect synonyms with OR?

> Did you join main concepts with AND?

> Did you use one of the words that are deliberately omitted from all DIALOG databases? These are call "stop words", and are excluded because they have little meaning in themselves. They are:

a	by	on	at	of
an	from	to	for	the
as	new	and	in	with

(Note that using AND as a connector is not the same as using it as a search term.)

Check that the printer is turned on.

To begin printing,
* Press CTRL-P (Remember not to use the ENTER key.)

To LIST the sets you have created
* Type: L

After the printer has LISTed your sets, to end the printing,
* Press CTRL-P

To clear your workspace,
* Type: K

name_____

2.8 Pick a simple search topic of your own choice.

1. Write it on the dashed line below.

---

2. Divide your topic into 2 or 3 main concepts.

   Write them here.

---------- ---------- ----------

3. List synonyms and related terms under each concept.
   Write them here.

---------- ---------- ----------

---------- ---------- ----------

* 4. Using the S command and the OR connector, construct a set for each of your main concepts.

* 5. Using the S command and the AND connector, construct a set of the main concept set numbers.

For an online explanation of the DISPLAY command:

* Type: D
* Type: ?

* 6. DISPLAY the first 5 references in the final set.

PART 3: FORMATS AND THE DISPLAY COMMAND

3.1 FORM OF DISPLAY FORMAT

You display references in a given set by using the DISPLAY command. Note that the most recently added references are displayed first.

To DISPLAY references in a briefer format, change the PRINT FORMAT option in the DISPLAY menu.

3.2 THE MOST IMPORTANT FORMATS

Format	Amount of information displayed
3	Basic reference, including authors, title, source (i.e., journal, date, pages, etc.)
5	Full references, including authors, title, source (i.e. journal, date, pages, etc.), descriptors, identifiers, abstract.
6	Titles only. Useful for inspecting contents of a set to see if it has what you expect.
8	Titles, identifiers, and descriptors only. This will help you modify a search by showing you the subject headings (descriptors and identifiers) assigned by Inspec indexers. More on this later.

This information on formats is also printed in the Quick Reference Guide.

* LIST your sets.

* Clear your workspace.

For another exercise in SEARCHing,
* SEARCH and SUBMIT the query for: VLSI

* SEARCH and SUBMIT the query for: FABRICATION

Using the AND operator, combine the 2 sets.

DISPLAY the first reference in the final set, using format 5.

* Type: D

* DISPLAY the 6th through 10th references, using format 5.
(Do this by choosing the 6th for the first reference to be displayed, and choosing to display 5 references.)

* DISPLAY the first 5 references in the final set, using format 3.

* Using format 6, DISPLAY the first 8 references.

* Using format 8, DISPLAY references 2 through 8.

WORKSHEET #2. Practice using the DISPLAY Command

If you do not remember the number of the set that you want to DISPLAY, use the LIST command to review the set numbers.

* Type: L

> EX 2.1. Look at the 3rd reference in the FABRICATION set. Use the full reference format.

> EX 2.2. Look at the first 5 references in the VLSI set. Use the format that includes the source of the reference, but omits the abstract, identifiers, and descriptors.

> EX 2.3. Look at the first 15 references in the VLSI AND FABRICATION set. Use the format that displays just the titles.

> EX 2.4. Look at the 3rd, 5th, and 7th-10th references in the VSLI AND FABRICATION set, using the format that includes just the titles, descriptors, and identifiers.

PART 4. SUBJECT AND NON-SUBJECT SEARCHING

4.1 INFORMATION INCLUDED IN AN INSPEC REFERENCE.

You have been searching in the Basic Index. It includes the title field (TI), the abstract field (AB), the descriptor field (DE), and the identifier field (ID).

References in Inspec are organized into distinct parts, called fields. Each field is labeled with a 2-letter code. Here is a partial diagram of the most important SPECIFIC FIELDS.

When you are searching in a specific field you must add a (W) between words in a phrase.

BASIC INDEX

SUFFIX CODE	FIELD NAME	EXAMPLES
none	basic index	MICROPROCESSOR
/AB	abstract	HOME(W)COMPUTER/AB
/DE	descriptor	PERSONAL(W)COMPUTING/DE
/ID	identifier	CHOICE/ID
/TI	title	MICROPROCESSOR(W)SYSTEM?/TI

ADDITIONAL INDEXES

PREFIX CODE	FIELD NAME	EXAMPLES
AU=	author	AU=RUNGE, H?
TC=	treatment code	TC=GENER?
CS=	corporate source	CS=STANFORD

4.2 SUFFIX CODES: SUBJECT-RELATED FIELDS IN AN INSPEC REFERENCE

You have been searching in the "Basic Index". It includes the title field (TI), the abstract field (AB), the descriptor field (DE), and the identifier field (ID).

> Title and abstract fields (TI,AB).

These fields contain subject-related words supplied by the authors of the reference. They are the same words that appear in the actual journal article.

* Return to the SEARCH menu to search for references with the phrase "optic fiber" in the title. Remember that to search with a phrase in a specific field you must insert (W) between the words in the phrase.

At the SEARCH menu, to choose to "search in a SPECIFIC FIELD",
* Type: 4

At the prompt to enter the field tag for title,
* Type: TI

To choose /ti,
* Type: 2

At the prompt to enter the search term,
* Type: OPTIC(W)FIBER?

* SUBMIT the query.

Using the DISPLAY command and format 8, look at the first three references.

Repeat the sequence to find references with "optic" in the ABstract. Use format 5 for the display.

> Descriptor and identifier fields (DE,ID).

These fields describe the primary focus of the article. They contain subject-related words supplied not by the authors of references, but by the Inspec database supplier.

DE words are taken from Inspec's list of standard subject headings. Articles on a given topic tend to have descriptors in common even when the authors do not use the same words in titles or abstracts.

ID words are created as needed to supplement the standard list. ID words tend to be new or specialized terms, although the same words may appear in both DE and ID fields.

* Using the sequence of steps above, SEARCH and SUBMIT the query for OPTIC/DE

* DISPLAY the first 3 references in format 8.

* Using the sequence of steps above, SEARCH and SUBMIT the query for OPTIC/ID

* DISPLAY the first 3 references in format 8.

4.3 USE of the LIST (L) COMMAND TO REVIEW SEARCH STRATEGY.

For an online explanation of the L command:
* Type: L
* Type: ?

A search of the Basic Index results in more references than a search of one of the separate fields comprising the Basic Index.

* First, SEARCH the Basic Index for references mentioning the word "optic". Use truncation. SUBMIT the query.

This search retrieves more references than the search on "OPTIC/DE", which you entered earlier. To see a list of your previous sets and their number of references, enter the command for LIST:

* Type: L

4.4 SEARCHING MULTIPLE SUBJECT-RELATED FIELDS.

You may search multiple fields using OR.

* SEARCH, but do NOT SUBMIT the query for OPTIC?/DE

* Refine the search by ORing it with OPTIC?/ID, OR OPTIC?/AB, OR OPTIC?/TI.

* Now SUBMIT the query.

To verify that the Basic Index is equivalent to the four subject related fields,

* Type: L

Note that the search in the Basic Index retrieved the same number of references as the search in the four subject-related fields.

WORKSHEET #3. Practice in searching subject-related fields.

EX 3.1. Find references with the word "laser" in either the TI OR DE field. Display the first 5 references in Format 8.

EX 3.2. Compare the above results with that from searching the Basic Index for "laser". Use Format 6, and look at the first 10 references.

* Print a paper copy of a LIST of your sets. Clear the workspace.

To begin the log off process, you must first be at the F (full menu) screen.

* Type: F

* Log off.

REVIEW

These are the topics you covered in session 1.

Logging on.

Logging off.

The SEARCH AND RETRIEVE command.

The use of the (W):	EXPERT(W)SYSTEM/TI
Truncation:	EXPERT SYSTEM?

OR joins synonyms and extends the search.

AND joins concepts and refines the search.

To see references:	DISPLAY
To list your sets:	LIST
To print:	CTRL-P
To clear the workspace:	K
Display formats	See Quick Reference Guide, Part G
Subject field searching:	/TI, /AB, /DE, /ID

SESSION 2

4.5 PREFIX CODES: NON-SUBJECT-RELATED FIELDS

Review the parts of an Inspec reference on the next page.

You have been using suffix fields (TI, AB, DE, ID). These are subject-related fields that comprise the Basic Index. You searched them by specifying them as suffixes to your search terms.

For example, "SS VLSI/TI,DE" gets you references in which "VLSI" is mentioned in either the TI or DE fields.

The other fields, called prefix fields, are not specifically subject-related, and the form of the command is different.

(for this page insert a copy of p. 21)

* Log on.

For example, to search for an author named B.C. Cole:

At the SEARCH menu, choose to search in a SPECIFIC FIELD.
* Type: 4

At the prompt for the field tag,
* Type: au

At the prompt, to choose au=,
* Type: 1

At the prompt, give the author's name,
* Type: Cole, B.C.

(Note that there is no space between the initials.)

* SUBMIT the query.

If you simply SEARCHed "B.C. Cole", you would have been disappointed. Try it if you need convincing.

The most commonly searched prefix (non-subject-related) field is the field containing authors' names (AU=).

4.6 AUTHOR SEARCHING. ("AU= ")

> Form of name. In the Inspec database, the standard format for listing an author's name is surname, comma, space, initials with periods but no spaces. For example:

AU=COLE, B.C.

> BROWSE command.

For an online explanation of the BROWSE command:

* Type: B

* Type: ?

The exact form of an author's name is unpredictable, since you do not know in advance whether a middle initial will be included. Therefore, before you begin the search, always BROWSE through the list of names to check on the exact form, or you may miss valid references where the author was listed in an unexpected form.

For example, suppose you want to see references by Donald Knuth, but you don't know how it is listed in Inspec. (Abbreviate BROWSE to B.)

To BROWSE on a SPECIFIC FIELD,
* Type: 3

At the prompt, to enter a field tag:
* Type: au

At the prompt, to choose au=
* Type: 1

At the prompt, to enter the last name:
* Type: KNUTH

When you find the listing you want, to group the terms into a set:
* Type: 1

At the prompt, enter the term number(s) for the set:
* Type: 4

When you are finished, to end the current BROWSE:
* Type: 4

To verify that you have retrieved references written by Knuth:
* DISPLAY the first several references in format 3.

Sometimes you will need to continue a BROWSE onto the next screen. Using the sequence of commands above, begin a BROWSE to collect references by A. Smith.

Suppose the BROWSE display did not get far enough into the alphabet to display the "Smith, A." you are looking for. To PAGE FORWARD:

* Type: 3

You can repeat this as many times as you need to see the next PAGE.

* End the current BROWSE.

The BROWSE command is available in any searchable field, whether it is a prefix field or a suffix field.

To use the BROWSE feature in a different field, BROWSE on the term "VLSI" in the title (the suffix field /TI).

* End the BROWSE.

4.7 TRUNCATION

Another way to get around the problem of not knowing the exact form of the author's name is to use truncation.

It allows you to find all names beginning with a specified string of characters. For example, SEARCH in the SPECIFIC FIELD index for an author named Smith whose first name you you do not know.

When prompted for the author's name:

* Type: Smith, ?

This will retrieve all references by an author named "Smith", regardless of initials. SUBMIT the query.

> NOTE: Truncation is also available for suffix fields.

Search in the SPECIFIC FIELD index for CIRCUIT?/TI

SUBMIT the query.

This will not only get you references in which "circuit" occurs in the TI field, but also "circuits", "circuitry", "circuitous". . . any word whose first 7 letters are "circuit...".

> More than one author. Suppose you seek references authored by collaborators named Williams and Brown.

* SEARCH in the SPECIFIC FIELD and SUBMIT the query for references by au=Williams, ?

* Using AND, refine the search by combining it with references in the specific field by au=Brown, ?

* SUBMIT the query.

> Repeat the exercise using the OR connector to get references by either author, whether written individually or in collaboration.

Check that the printer is on.
Use CTRL-P to begin printing. Do NOT use the ENTER key.

* LIST the sets you have created.

After the printer has LISTed your sets, use CTRL-P to end the printing.

* Clear the computer's workspace.

WORKSHEET #4. Practice in searching for references by a particular author.

*EX 4.1 Find references to papers by James F. Gibbons. Use the BROWSE command and group the terms into a set.

*EX 4.2. Using truncation, find references by A. G. Smith or A. G. D. Smith.

*EX 4.3. Using BROWSE, find references by A. G. D. Smith or A. G. Smith.

*EX 4.4. Find articles co-authored by Wade and Wong (assume that you do not know their initials, and use truncation, along with the AND connector).

*EX 4.5. Find articles co-authored by P. Clauws and J. Broeckx.

*EX 4.6. Find articles by either P. Clauws or J. Broeckx.

PART 5: COMMAND SUMMARY

COMMAND	USE
B	Allows you to BROWSE through a field.
D	DISPLAYs references from sets created using the SEARCH command.
K	Restarts your search in File 13 (INSPEC) and erases previously formed sets. Use when approaching the system limit of 98 sets of 1,000,000 references.
L	LISTs all sets created since start of search session. Use for recap of set numbers and search strategy.
S	Locates references containing the specified SEARCH terms and sets them aside in a numbered set.

COMMAND SUMMARY (cont.)

COMMAND	USE
?	Requests online explanation of command choices on the screen.
CTRL-C	Cancels a search in progress.
CTRL-P	Begins and ends the printing.

(This command summary also appears in Part C of your Quick Reference Guide.)

PART 6. MODIFYING SEARCHES IN PROGRESS

After you have written down your topic succinctly, identified the main concepts, listed synonyms and related terms, entered the appropriate commands and DISPLAYed a few sample references, you may discover that you have not found exactly what you are looking for. You may have located too few references or too many.

6.1 TOO FEW REFERENCES

6.1.1. Add synonyms.

Recall the example about splicing of optic fibers.

* SEARCH and SUBMIT the query for SPLICING.

* Now use AND and the appropriate menu selections to extend the query with OPTIC and FIBER.

Compare the number of references in the resulting set with what you get after enriching the search with additional synonyms for each concept, listed on the following page.

CONCEPT A	CONCEPT B	CONCEPT C
SPLICING	OPTIC	FIBERS
SPLICE	OPTICS	FIBER
SPLICED	OPTICAL	FIBRE
JOINING		FIBRES
JOINT		CABLE
JOINTS		CABLES
JOINTING		
LINK		
CONNECTION		
CONNECTIONS		

* Using truncation to include all the synonyms above, enter each main concept and its synonyms with OR. Submit each query.

  SPLIC? OR JOIN? OR LINK? OR CONNECT?

  OPTIC?

  FIBER? OR FIBRE? OR CABLE?

* Combine the concepts using set numbers and AND.

* To compare the numbers of references retrieved by the two search statements, LIST the sets you have created.

There is usually a trade-off between getting everything on a topic ("comprehensiveness") and getting a very focused set of highly relevant articles ("precision"). A very comprehensive search will usually contain some irrelevant articles. A very precise search will usually miss some relevant articles.

> Careful about truncation. You should be especially careful in using truncation with less that 4 characters. In the example above, we truncated after "fiber?". Had we truncated after a shorter string of characters (e.g., "fib?"), we would have ended up with more false hits (e.g. fib, fiberscope, fiblas, fibonnacci, fibonacci...).

> Help in thinking of synonyms. For a topic with which you are not very familiar, find a few highly relevant citations and inspect the DE, ID, and AB fields to get ideas for additional synonyms.

* SEARCH and SUBMIT the following query:

OPTIC/TI AND FIBER/TI AND SPLICING/TI

* DISPLAY the first 5 references in format 5.

Note from the DE field that "cable jointing" might be a useful additional synonym for "fiber splicing".

6.1.2. To make your search less specific, loosen your logic requirements.

For example, compare the following.

Too stringent approach:

* SEARCH and SUBMIT the query for:

EFFECTS AND GLARE AND VDT AND OCCUPATIONAL AND HEALTH

Looser approach (drop a concept):

* SEARCH and SUBMIT the query for:

VDT AND HEALTH

* DISPLAY the first 5 references in format 6.

> Another way to make your search less specific is to use the AND connector more sparingly, while joining some of the concepts with the OR connector.

* SEARCH and SUBMIT the query for: VDT

* SEARCH and SUBMIT the query for:

GLARE OR OCCUPATIONAL OR HEALTH

* Refine with AND logic using the set numbers. SUBMIT the query.

* DISPLAY the first 10 references in format 6.

Effective use of the above approach requires that you use your intuition in deciding which concepts can be meaningfully OR'ed together to make sense for your search topic.

6.1.3. Choose another database. Inspec is but one of more than 100 databases available through DIALOG. It is geared for topics in physics, electronics or computers. The above search on VDT's and occupational health would probably get more references in the MEDLINE database (File 154 in DIALOG). You will receive a list of DIALOG databases as part of your reward for being a subject in our experiment.

6.2. TOO MANY REFERENCES

If you have too many references you will need to make your search more specific by adding a concept, searching in a specific field, or using the NOT connector.

6.2.1. Add a concept. A frequent cause of getting too many references is that your search topic is too general. Suppose for example that you want references on the topic of silicon.

* SEARCH and SUBMIT the query for: SILICON

Do you really want to wade through that many references? Upon reflection, you realize that your real interest is in diffusion of boron in silicon.

* SEARCH and SUBMIT the query for:

DIFFUS? AND BORON AND SILICON

* DISPLAY the first 10 references in format 6.

This is a still a lot, but it is nevertheless a more manageable result, with much greater precision (concentration of relevant references).

6.2.2. Find references that focus on the main point of your topic.

When your search includes words from the Abstract (AB field) you may retrieve some irrelevant references because a term may be mentioned only in passing. By restricting your search to a shorter field, where every word must count, you can often achieve greater precision.

To focus on the main point of your topic, search on the subject related fields, TI, DE, and/or ID, rather than in the Basic Index.

5.2.2.1. THE TI FIELD

For example, which search yields a higher concentration of references relevant to the topic of diffusion of boron in silicon, the search above in the Basic Index or a search in the title field?

* To search in a specific field, SEARCH and SUBMIT the query for:

DIFFUS?/TI AND BORON/TI AND SILICON/TI

To compare the relevance of the retrieved references,
* DISPLAY the first 10 references in format 6.

* Compare the numbers of references retrieved by the two searches.

* Print a paper copy of your sets.

6.2.2.2. THE DE AND ID FIELDS

Inspect the ID and DE fields in highly relevant references to discover words or phrases that are actually used in INSPEC.

First, find some highly relevant references. A good way to start is by searching the TI field. Using the set of references you retrieved in the exercise above:

* DISPLAY the first 5 references in format 8.

Now, inspect the DE and ID fields for likely terms. Note the DESCRIPTOR "DIFFUSION IN SOLIDS" that appears in the first few references. This looks like a promising descriptor. So, restrict your original (too comprehensive) set to those references that include "DIFFUSION IN SOLIDS" as a descriptor.

But remember that "in" is a stop word that cannot be used as a search word. Yet, when a stop word is taken out of a reference, a gap remains where the word once was. You must tell the computer to skip over the gap by inserting the numeral "2" before the "W".

* SEARCH and SUBMIT the query for:

BORON AND SILICON AND DIFFUSION(2W)SOLIDS/DE

To complete your search, combine the set in which all three concepts occurred in the title with the set in which the phrase "DIFFUSION IN SOLIDS" occurred as a descriptor. Use set numbers and the AND connector.

* DISPLAY the first 10 references in format 6.

Most of these references should be quite relevant.

4.2.3 Use the NOT connector to exclude unwanted references.

In principle it is possible to exclude references on a given topic by using the NOT connector. For example:

* SEARCH and SUBMIT the query for: COMPUTER? NOT ANALOG

This search eliminates references in which the words "analog" and "computer" appear. But if the intention was to retrieve references on digital computers rather than analog computers, use of NOT is probably unwise. References such as the following would be inadvertently excluded:

"The computer scientist--analog techniques for digital computers."

"Two-mode multiline laser stabilization using a Fabry-Perot filter under analog and digital computer control."

"Digital emulation of analog computer techniques for the solution of kinetic systems."

> A more prudent use of the NOT connector is illustrated below.

Suppose you wish to find articles on VLSI by all Stanford authors except for J.D. Meindl (because you are already aware of everything Meindl has written on the subject).

* SEARCH and SUBMIT the query for: VLSI AND CS=STANFORD

* DISPLAY the 10th through 20th references in format 3.

Note that by searching the CS field--a prefix field--for "Stanford", you retrieve references in which Stanford is given as the reprint address.

Compare these results with the results below.

* Using the number of the set above and NOT, connect the set with AU=MEINDL, ?

* DISPLAY the 10th through 20th references in format 3.

The references by Meindl have dropped out.

4.2.5 Restrict your search to certain "Treatment Codes".

> If you are interested in only certain aspects of a broad topic, you can sometimes make use of the Treatment Code prefix field (TC=).

For example, suppose you want references on the economic aspects of telecommunications:

* SEARCH and SUBMIT the query for: TELECOMMUNICATION?

* DISPLAY the first 10 references in format 6.

* Using the set number and the AND connector, refine the search with: TC=ECONOMIC ASPECTS

* DISPLAY the first 10 references in format 6.

See section H of the Quick Reference Guide for a complete list of Inspec's Treatment Codes.

> Use truncation to abbreviate the TC's. For example, suppose you want review articles on lasers.

* SEARCH and SUBMIT the query: LASER? AND TC=GENERAL?

* DISPLAY the first 6 references in format 6.

But be careful about abbreviations. For example:

* SEARCH and SUBMIT the query: LASER? AND TC=REVIEW

WORKSHEET #5. Review questions on modifying searches in progress.

EX 5.1 List 3 approaches to increasing your retrieval when your original search yields too few references.

_____

_____

_____

EX 5.2 List 3 approaches to narrowing your retrieval when your original search yields too many references.

_____

_____

_____

EX 5.3 Find references to review articles on telecommunications. Display the first 10 references using the title-only format.

EX 5.4 Find theoretical articles on lasers. Display the third reference in the format that includes the abstract.

EX 5.5 Find articles on the topic of Titan (a moon of Saturn) written by Harvard researchers. Display the first 3 references in format 3.

Print out a paper copy of your list of sets. Clear the workspace.

PART 7. SPECIAL SYMBOLS

Special characters or symbols and Greek letters appearing in abstracts or titles are spelled out in natural language, e.g., "gamma".

> Chemical elements or compounds may be represented by symbols or in spelled out forms. Be sure to use both forms in a search. For example:

* SEARCH and SUBMIT the query: GALLIUM ARSENIDE OR GAAS

* DISPLAY the first 10 references in format 6.

> Subscripts or superscripts are indicated by preceding the character or number with "sub" or "sup". For example, to find references in which carbon dioxide appears in the title:

* SEARCH and SUBMIT the query:

CO(W)SUB(W)2/TI OR CARBON(W)DIOXIDE/TI
(Remember to include the (W) in phrases when searching in specific fields.)

* DISPLAY the first 10 references in format 6.

To find references in which the formula for carbon-13 appears in the title:

* SEARCH and SUBMIT the query:

  SUP(W)13(W)C/TI OR CARBON(W)13/TI

* DISPLAY the first 10 references in format 6.

Note in the carbon dioxide and carbon-13 examples that you must search on both the chemical formula and the spelled out form to retrieve all the references.

* Print a paper copy of the list of the sets you have created.

* Clear the computer's workspace.

* Log off.